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COMMITTEE ON EDUCATIONAL RESEARCH
The University of Alberta

FORTHCOMING ISSUE

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SPECIAL ISSUE

PIAGET: REPLICATIONS AND CRITIQUES

Several manuscripts are in hand but scholars interested in this area are invited to submit manuscripts or give notice of intention to do so.

Editorial Comment

PSYCHOMETRICAL INEXACTITDE (?)

Since the pioneers of psychometrics began to develop standardized instruments for the estimation of ability, achievement and other dimensions the questions "what do tests measure?" and "how well do they measure?" have been posed. So far the answers given have been unsatisfactory to most educators but in spite of that most do rely heavily on the instruments they malign. That is but a well known fault of human nature as is the fact that for a large proportion the only criterion applied to doubt the validity of the systematically organized closed-answer tests is the individual's subjective estimate based upon the results of subjectively scored tests. But, those features are not the concern here.

The failure of psychometric tests to measure and hence predict accurately may be due to factors other than the inadequacies of the instrument. Some years ago* I called attention to the degree to which logicians and philosophers have either disregarded the scientific dimension of education or devoted their energy to knocking it down. The result is a significant lack of critical examination of experimental designs and techniques. There has been a substantial and beneficial change in recent years but the back-lag has not yet been overtaken and it will probably take some time.

Herein attention will be focussed on two aspects of ability tests and it will be asserted that a significant proportion of the error in the scores obtained may not be in the scores *qua* scores but in the way in which they are interpreted.

(1) Since Cattell invented the intelligence quotient concept and arbitrarily defined it as the number obtained by multiplying the mental age/chronological age ratio by one hundred the validity of his assumption has never been questioned.† In view of the number of mathematical functions that could hold between the CA and MA variables it does seem

**Philosophical Analysis and Language in Education*, Unpublished Ph.D. Dissertation (Minneapolis: University of Minnesota, 1962).

† Besides questioning the empirical validity of the relation one could also question the mathematical validity of dividing an ordinal number by a cardinal number.

surprising that the simplest of all has been adopted and retained unchallenged and untested. The case for the *a priori* acceptance of $MA/CA = I.Q.$ does not seem to possess any peculiar merit over say $MA/\sqrt{CA}$ or MA^2/CA^3 .

There has been considerable concern with and investigation into the assumption of the constancy of the I.Q. metric and yet none of this, as far as this writer is aware, has led researchers or logicians to question the validity of the ratio itself, nor has it lead to questioning the assumption of linearity that is assumed and which asserts that the MA/CA ratio is equally descriptive of cognitive ability for all levels of each of the variables.

There is no need to press the point but it may well be not pointless to suggest that researchers, and graduate students seeking topics for a dissertation, might do valuable service by hypothesizing and designing studies to test a number of the mathematical functions that might hold between MA as it is now measured and CA . There is the possibility that our MA measurements may not be as faulty as the predictive validity of I.Q. scores leads us to believe.

(2) One advantage that the natural scientist has over the social and behavioural scientist is the ease with which measurements can be repeated to ensure the maximum degree of accuracy. Measurements of the same subject cannot be repeated by psychometricians because (1) the act of measuring alters the subject measured and (2) every measurement is time dependent and therefore cannot be repeated. The changes in the subject being measured are probably more important limitations on accuracy or measurement than the techniques and instruments used for measuring. Statistical methods have been developed to minimize the influence of this factor but these do little to solve the problem as far as interpretation of results is concerned.

If a natural scientist wants to determine, say, the force exerted by a particle moving at a specified velocity or over a range of velocities he can repeat his measurements sufficiently to obtain a mean value that can be reasonably assumed to be very very close to the true value. In the process he obtains a distribution of scores the mean value of which is taken to be the true score. It follows that if he is comparing the value obtained in one situation and that obtained in another and finds that they are equal he knows that he is comparing the mean value for one situation with the mean value for the other. He also can know if the two distributions are sufficiently similar in form for the two means to be compared.

For the psychometrician the situation is similar. If he needs to compare the ability to two subjects he measures them with the same instrument and obtains a score for each. He is precluded from measuring the same subject again with the same instrument or in fact with a different instrument. He can and in many cases does, use another instrument or another form of the same instrument but he cannot measure

the same subject. If he had the advantage of unlimited repetition of measurement he would, as the statistician well knows, obtain a distribution of scores for each subject and be able to calculate the means and compare them with the same degree of authenticity as the natural scientist's comparison of force.

In the absence of unlimited repeatability the psychometrician is faced with the situation in which he has for all practical purposes just one score from each subject. All he can say is that it was obtained at the same time under the same conditions by the use of the same instrument. But for each subject it is one of an infinite number of possible values. Because the probability of it being at or near the mean of the distribution of all theoretically possible scores is greater than the probability of its being near one extreme of that distribution it is assumed to be the mean score and to closely approximate the true score. Consequently if the scores obtained for each of the two subjects have the same numerical value it is assumed that they possess equal ability on the dimension measured by the instrument.

It is hardly necessary to state that the two numerically equal scores may in fact be drawn from very different points in the respective distributions and therefore the two subjects may be in fact widely divergent in ability. This the statistician and the test developer know and endeavour to allow for by specifying the standard error of measurement or by using confidence limits for comparative purposes. These correcting or warning techniques do not greatly enhance interpretation, understanding and use of results because the professional education of teachers has not yet reached a level that enables understanding. It would appear that nothing but psychometric sophistication will produce a state in which it is known that I.Q. 120 does not necessarily equal I.Q. 120. One can conclude by asking, "Is psychometric measurement really inaccurate?" This aspect indicates the need for more and more basic research.

Dr. Fisher documents the fallacy in the supposition that education is the crucial variable in programs directed toward the amelioration of social and economic injustice. The thesis held is that this supposition, if at all true, is only partially true, and therefore it works hardship upon the underprivileged and distorts the process of social change. By documenting the steady improvement of educational attainments of Alberta's Indians and comparing these figures with those of rising welfare costs and high unemployment among Indian youth a negative picture is drawn which contrasts with "official" views. Further comparisons are drawn between the various Indian Agencies in the Province and relevant emerging nation state. These latter comparisons indicate that by and large the product of Indian education has been meagre and that by comparison underdeveloped nations are producing many more skilled and professional people than Alberta's Indian Education programs. In conclusion a number of other variables, cultural, social, and economic, are noted as being relevant to both education and social progress.

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Education and Social Progress

It has long been one of the central suppositions of western liberal or progressive thought that social progress is stimulated by education. Today, many programs for the amelioration of social and economic injustice focus on the provision of more and better formal education for those persons who are the objects of the programs. In justifying the expenditure of more money's in the educational sphere it is held that in lieu of direct governmental intervention in the economic sphere social progress can be achieved by "up-grading" the educational content and achievements of the economically disadvantaged. Then, it is maintained, the natural economic forces will operate through "free enterprise" or "competitive" mechanisms and the desired results will be achieved; the economic "up-grading" of the disadvantaged with general benefits to the whole of society.

It is the thesis of this paper that this supposition is, if true at all, only partially true, and that it therefore works general hardships upon the economically disadvantaged and distorts the social change process. There

are numerous "causes" of poverty among the various peoples that make up Western Canada, and lack of education or insufficient education is often a lesser "cause." To demonstrate this, the plight of the Alberta Indian will be examined and compared to other cultures and peoples when possible.

Educational Achievements

Much progress has been made in the general up-grading of Indian education in the past several years. Indeed, if one takes the long view, momentous changes and improvements have been made. Indian education for the majority of Alberta's Indians falls under the class of events known as "treaty rights". For example, the Blackfoot, Blood, Peigan, Sarcee and Stony Indians received the right to education in the following statement from Treaty No. 7.

... Her Majesty agrees to pay the salary of such teachers to instruct the children of said Indians as to Her Government of Canada may seem advisable, when said Indians are settled on their Reserves and shall desire teachers.¹

Shortly after Treaty No. 7 was concluded the "said Indians" were settled on their Reserves and expressed a desire for teachers. But, as Katherine Hughes, the biographer of Father Lacombe indicates, all was not well. She says, "The Indians however absolutely refused to part with the younger boys for whom the schools were intended."² There were some Indians available but:

The main difficulty was that these boys were too old to be broken to school ways, but they were the only boys available. All winter they continued to be as wild as young elk. Sometimes they would turn the playground into a battle-field; more often they would slip away to a big hill a mile distant and play there well away from the shadow of the school. Occasionally the teacher on ringing the bell for his charges would not find one in sight. In an instant, or so it seemed, they had hidden themselves about the yard, ready to lope off to the prairie if the teacher would not come out to round them up. During the winter some of the boys ran off. When the spring came they all clamoured to be free.³

Because of these and other difficulties found in running schools for Indians, the tone of the European legislating Indian education changed.

... every Indian who has attained the age of seven years shall attend school.⁴

And,

The Minister may require an Indian who becomes sixteen years of age to attend school for such further period as the Minister considers advisable, but no Indian shall be required to attend school after he becomes eighteen years of age.⁵

In this manner did the Alberta Indian become subject to compulsory universal education, the mechanism by which social progress is achieved. The Indian education program also expanded in its extent, as well as comprehensiveness and compulsion. By the 1950's Indian education included kindergarten to University education.⁶ Indeed, today Alberta's Indian population has roughly the same educational opportunities as any other segment of Alberta's population.

Within this extending range of opportunity, there have been improvements in the amount and kind of education the Indian child has received. For example, it has been pointed out that there has been considerable improvement in grade placement among Canadian Indian students.⁷ Table I shows the difference between grade placement of Indian children enrolled in schools in 1940 and 1964.

TABLE I
GRADE PLACEMENT OF INDIAN CHILDREN

Grade	1939-40	1963-64
Kindergarten and Ungraded	—	9%
1 - 4	78%	52%
5 - 8	21%	31%
9 - 12	1%	8%

These are considerable improvements in grade placement. It is obvious that more Indians are getting more and higher level education. Looking at the Indians of the Province of Alberta (although they are included in the national figures) the improvement is more obvious.

TABLE II
PERCENTAGES OF ALBERTA INDIANS ENROLLED AT
VARIOUS GRADE LEVELS, 1964-65⁸

Grade 1 - 4	50%
Grade 5 - 8	38%
Grade 9 - 12	12%
	100%

Although these figures still show the tendency for the lower grades to be over populated in contrast to the upper grades, the improvement over Canada's figures for 1939-40 and 1963-64 is marked. It would appear that Alberta's Indians are, in relation to Indians generally, getting a very good education. However, these figures are mildly misleading; misleading in two directions. First, as they concern *only* those enrolled in educational institutions they tell us only percentages of enrollees, not percentages of total population or age group population. Second, because they concern only enrolled students from grades one to twelve they do not indicate what is the social result of improvement in grade placement. It is to these problems that the remainder of the paper will address itself, beginning with the latter, the results of education.

Indian Education and Employment

As education, in Western liberal thought, is conceived of as aiding in the amelioration of social and economic disadvantages, it should be seen if improved education is doing just this. Figures on public assistance to Indians are difficult to find and to interpret, possibly because Federal expenditures in this area are of considerable political significance. However, expenditures for food, fuel, clothing and other supplies for Indians in Alberta excluding other public assistance such as rehabilitation, juvenile delinquents) were \$294,625.00 in 1959-60 and \$683,083.00 in

1962-63. These figures are for recent years, years in which the Indian of Alberta has become more closely tied to the non-Indian Anglo-Canadian economy and more alienated from the subsistence hunting or trapping economy of early post-contract or transitional days. They indicate that Alberta's Indians appear to have had and are receiving substantial Federal assistance, despite changing educational and economic opportunities. One reason for this steadily increasing welfare burden might be the net result of education. Recent figures indicate that the young men and women of the various Alberta Indian reserves contribute more than their share to the public assistance figures. This can be seen by comparing the figure of 43,%¹⁰ the percentage of the total resident Indian population of the Province of Alberta receiving relief in 1963, to the percentage of unemployed among those Indians who terminated their education in 1964-65.

TABLE III
DISTRIBUTION OF ALBERTA INDIAN STUDENTS
TERMINATING THEIR EDUCATION, 1964-65¹¹

Agency	Employed	Advanced Education	Unemployed
Edmonton	21%	16%	50%
Blood	12%	17%	56%
Lesser Slave	31%	0%	63%
Blackfoot	10%	0%	80%
Peigan	28%	4%	64%
Hobbema	18%	2%	48%
Saddle Lake	9%	2%	65% / 87%
Stony—Sarcee	22%	9%	68%
Athabasca	15%	0%	63%
Ft. Vermilion	—	—	—

N.B. The figures in the Unemployed column include students who terminated to go into remedial education programs such as "up-grading", "pre-employment" and the like. The percentages of employed students include almost any kind of employment, but appear to mean mostly casual labour. Advanced education includes any education above the grade ten level other than high school. Unemployed included those female students who went directly into marriage from school. The unemployment figures are corrected for students dropping out of school below the grade five level (they are not included) accounting for the dual figures for Saddle Lake and reduced percentages in other Agencies. Male-female distributions within the three categories are not available. The source from which this data was obtained does not allow complete information and therefore in no agency do the percentages total 100%.

These figures too, are somewhat misleading. They include both stay-ins and drop-outs, married and unmarried females, some institutionalized drop-outs, and exclude students in remedial programs that may pay off in the future. They do indicate quite clearly that the young Indian of Alberta is contributing very little to the economic advance of his people and to the general well-being of the Province. There does not seem to be an economic advance which corresponds to the betterment of Indian education. Indeed, the large number of unemployed seems to correspond closely to the doubling expenditure in relief assistance during the three-year period noted above. These shocking unemployment figures

are the result of numerous factors outside of the domain of education, and it is not here implied that either Indian education or the educators of Indians have failed. It is merely pointed out that these figures indicate very clearly that education alone cannot "up-lift" the Indian. There are factors more critical than education.

Economic Growth and Human Resources

Economic Growth potential is tied closely to general education, but it is more intimately related to the social than the intrinsic goals of education. However, it has been pointed out by Harbison and Myers in, *Education, Manpower and Economic Growth*, that there is a relationship between these two sets of goals.

The development of man for himself may still be considered the ultimate end, but economic progress can also be one of the principal means of attaining it. And human resource development systems can be designed which intentionally help to increase production of essential goods and enhance the freedom, dignity, and worth of the individual.¹²

And further,

Thus, in a very real sense the wealth of a nation and its potential for social, economic and political growth stem from the power to develop and effectively utilize the innate capacities of people.¹³

These quotations, in a nutshell, state what the greater Canadian society wishes education to do for its Indian people. For their own sake, the sake of Anglo-Canadians, they wish to unburden themselves economically from the excessive relief expenditures. At the same time, for the sake of the Indian individual, they wish self-realization, social and political growth, and the reaching of potentials for the Indian.

Harbison and Myers point out that reaching potentials occurs most readily in populations that have a stock of human resources and the development potential. They indicate that the stock of human resources and developmental potential can be illustrated through the following ratios.

1. The number of teachers per 10,000 population.
2. Engineers and scientists per 10,000 population.
3. Physicians and dentists per 10,000 population.
4. Pupils enrolled at first level (primary) education as a percentage of the estimated population aged 5-14 inclusive.
5. The adjusted school enrollment rates for first and second levels combined.
6. Pupils enrolled at second level (secondary) education as a percentage of the estimated population aged 15-19 adjusted for length of schooling.
7. Enrollment in the third level (higher) education as a percentage of the age group 20-24.¹⁴

The percentage of enrolled students per age group population is seen as critical to these two authors and, indeed the last two percentages (numbers 6 and 7) indicate the "composite index" of manpower development.¹⁵ It might be illuminating if similar indices were computed for Alberta's Indians, but as these computations done by Harbison and Myers are for nation states considerable methodological difficulty is created if one wishes to compare them to the Indian populations. Such a comparison

might be made with considerable value if two ideas are kept in mind. First, that the figures are ratios and not absolute numbers, and that they obscure rather large absolute differences. And, second, that the Alberta Indians are part-societies, not politically “independent” states. These part-societies form various agency groupings which are administrative collectivities, not integrated wholes. Despite these differences the legalities associated with Treaty obligations and certain traits of “ethnicity” divorce the Alberta Indian to a great degree from the greater Canadian society. In a very real sense, the individual reserves and agencies are independent from the larger society and divorced from one another and should be viewed from the smallest collectivity observable. In the present case the smallest available unit is the agency. The following table indicates the composite index for each agency, how it is developed, and to what nation state it compares.

TABLE IV
COMPOSITE INDEX OF MANPOWER DEVELOPMENT: A
COMPARISON WITH ALBERTA INDIANS, 1964-65¹⁶

Agency	% 15-19 Gr. 9-12	% 20-24 Coll./Tech.	Comp. Index	Comparison
Edmonton	67%	9 %	110.4	Japan (111)
Blood	37%	4 %	55.5	S. Korea (55)
Lesser Slave	37%	0 %	37.0	
Blackfoot	36%	0 %	36.0	Cuba (36)
Peigan	27%	.8%	31.1	Iraq (31)
Hobbema	22%	9%	26.4	
Saddle Lake	23%	.7%	26.3	Jamaica (27)
Stony—Sarcee	16%	2 %	25.0	Pakistan (25)
Athabasca	17%	0 %	17.0	Iran (17)

Table IV should cause the reader to feel better about the progress of Canadian Indian education. It indicates that the Indian of Alberta is getting an education which, when using the composite index of manpower development, is equal to several countries making great economic leaps into the modern industrial world. Indeed, Edmonton Agency which is composed of nine, small, Cree-speaking bands, has a higher index than Canada as a whole; Canada’s being 101.6. This startling fact indicates the fallacy of the figures. What the composite index of manpower development portrays for Alberta’s Indian populations is the intent of education, not the result. The ratios illustrate the failure of compulsory universal education rather than the success.

Recall the changes in Indian education mentioned at the beginning of the paper:

The Minister may require an Indian who becomes sixteen to attend school for such further period as the Minister considers advisable but no Indian shall be required to attend school after he becomes eighteen years of age.

In view of this the important numbers in the table are the second column, the percentage of the agency populations, aged 20-24, enrolled in college or technical education (roughly Harbison and Myers third level). The radical drop between columns one and two is only the beginning of

the indicated failure. If we pursue this point further, to the point of asking what becomes of the persons in third level education, to the point of asking "How many teachers, doctors, dentists, scientists and engineers per 10,000 population of Alberta's Indians?", Harbison and Myers first three indices, we realize the extent of the failure.

Of the 23,714 individuals who made up Alberta's Indian population on the last day of 1964, six are qualified teachers, five are nurses, and four more are medical or laboratory technicians.¹⁷ No persons of Alberta Indian ancestry are medical doctors, professional scientists or engineers, and there are no Alberta Indian dentists. Further, of the above persons listed, among the teachers, the vast majority teach in either Edmonton or Calgary. Of the nurses, three of the five have dropped their Indian identity (become enfranchised) and are employed at a considerable distance from their home communities. If one computes the number of Indian teachers per 10,000 population of Alberta's Indians one arrives at slightly more than two and one-half. It is worth noting that Iran, the least developed of the nation states has twenty-four teachers per ten thousand and, Canada as a whole, with a composite ratio below that of Edmonton Agency, has eighty-eight teachers per ten thousand.

It could be argued that this comparison, the composite index and the number of professional specialists per ten thousand population, is spurious and misleading. It could be argued that as Alberta's Indians are enclaved part-societies it is illogical to expect them to fill their own needs for specialists, but these arguments avoid the issue. It could be argued as the Indians were in a primitive state until the various treaties were signed that it is unfair to ask that they equal modern Canada or modern nations anywhere else. But, it must be asked, where were Iran, Jamaica, South Korea, indeed even Canada, when Treaty No. 7, the one mentioned above, was signed in 1877? This question brings problems of cultural preparedness for differing kinds of education, and a whole host of questions relating to the "causes" of poverty external to the compulsory formal education program to the fore.

But first, before grappling with questions of culture in the past, we must point to several attributes of culture in the present. *First*, the reader must be reminded of the growing dependence of the Alberta Indian upon public assistance. The remarkable increase in relief expenditures between 1960 and 1963 indicates this. *Second*, the contribution of the young Indian, fresh from school, to the population of the unemployed on public assistance should be recalled. *Third*, it must be pointed out that of those that have completed their education and achieved some level of professional ability many leave their home communities and, indeed, reject their Indian ancestry in the process (even if this be voluntary enfranchisement of women as the result of marrying a non-Indian). Looking at these three attributes of modern Indian culture, welfare dependency, unemployed youth, and vanishing employment models, it must be concluded that the results of compulsory formal education are a disaster for the Indian community.

Why should this be? Why is education not up-grading the Indian

economically? One reason is supplied by Paul Goodman in his essay, "Compulsory Mis-education".

In his address, Secretary Wirtz (Secretary of Health, Education, and Welfare, Louis Wirtz) makes the usual correlation between employment and years of schooling:

The unemployment rate for individuals today with less than 5 years is 10.4 percent. For those with 9-11 years of school, it is 7.8 percent; for those with 13-15 years of school, 4 percent; but for those with 16 [sic] or more years of school, the unemployment drops to 1.4 percent.¹⁸

Secretary Wirtz's views are much the same as those alluded to at the beginning of the paper; education means social progress and economic advancement, therefore, the more school the better. This unfortunately appears to be a fallacy for both Alberta Indians and the unemployed of the United States. For, as Goodman wryly comments,

As he (Wirtz) himself implies in another context, the *prima facie* explanation of the correlation is the parents' income: By connections, manners and aspirations, middle class children get middle class jobs; schooling is an incidental part of it.¹⁹

For the present case Goodman's comment might be paraphrased to read, Anglo-Canadian children get Anglo-Canadian jobs, and it would fit. This would explain why, despite good education, the Indian appears more dependent upon public assistance; he is not an Anglo-Canadian. This would explain why today's Indian youth, though better educated than his father and grandfather, is heavily unemployed; he is not an Anglo-Canadian. And, this explains why those persons who could raise the aspiration levels of their younger sisters and cousins choose to leave the reserve and the Indian way of life for the city and "enfranchisement"; because they and theirs are not Anglo-Canadians.

These statements could be used to indicate an inherent inferiority of non-Anglo-Canadians, Indian, Metis, or whatever. This is patently untrue. Inherent inferiority, biological or mental, is not the case. The villain is the liberal or progressive assumption that education is the cure-all for economic (and cultural) disadvantage.

Conclusions

To conclude the points already made must be reiterated and other ramifications indicated.

1. The attitude has been taken that the supposition that education is the key to economic and social advancement for disadvantaged people is a distortion of the truth or a half truth. That as such it works hardship upon the disadvantaged.

2. In support of this point of view it was indicated that education for Alberta's Indians has undergone considerable improvement from the first efforts shortly after white contact and reservationization to the present. It was also pointed out that today's education is compulsory, (no Indian may wholly escape), and extensive, it runs from kindergarten to college, albeit college is not compulsory. In the process of indicating the above, a passage from the biography of Father Lacombe was quoted. It indicated that the parents of Indian children were somewhat reluctant

to allow their off-spring to enter school and that those in school were more suited to the wild and woolly play of aboriginal youth than the order and regulation of the classroom. Not the least dull, the Indian students were quite capable of confusing their teachers and on occasion fled the school, never to return. This indicates one major facet of the argument. Initially, and to this day, *the problem of obtaining the desired end from education is a cultural problem*. It is seen most sharply in the passage concerning early education, but, with the reservationization of the Indian and with the increased governmental control of his destiny, initial cultural differences were institutionalized. Although reserve cultures have continued to change, it is quite clear large differences continue to exist.

3. Despite improving grade placement and the extensification of formal education, the modern Indian is dependent upon the largess of the greater Canadian society for subsistence. There are innumerable reasons for this, among which is the belief that education alone will liberate the Indian from his past. The past, however, clings tightly. The isolation of the Indian on his reserve is a thing of the past. The Canadian economy has reached into and around his reserve to drill for oil, farm for wheat, fence for cattle. In the process, the Canadian economy has destroyed the aboriginal economy, hunting and gathering for subsistence, trapping for trade and subsistence. This destruction of the natural environment made the Indian dependant upon the only other viable environment, urban industrial Canada. We now see that the lifeways of a man of the bush or prairie are not suited to the world of the city.

4. Part of the burden for the indigency of the modern Indian must fall on the back of the school, but, the greater part must fall on the backs of government and business. The high rate of unemployment among modern Indian youth is composed of two aspects. First, the school which the Indian attended was not conceived of as mediating between two cultures, but, rather, as an institution teaching and imposing an alien culture upon a subject (and possibly inferior) people. In both conceptions the school was wrong. Whether or not it chose to mediate the school in fact was a mediator. Because it chose to teach and enforce conformity to a culture alien to the Indian child it was an inefficient mediator. Through this inefficiency and not through individual inferiority the schools produced a product (an individual) poorly suited to either subsistence hunting and trapping or industrial labour. This product was rejected by both government and business. From treaty day to the inception of the idea of academic integration and social assimilation the Indian has been treated as a consumer of goods and services rather than a producer. In order to consume as a non-producer, the Indian had to rely on government subsidy, public assistance. Businesses, motivated primarily by economic considerations excluded Indians from occupations leading to acculturation (culture change) and economic assimilation. Thus, although the schools' failures to effectively mediate are partially the cause of today's destitution, the failures of government and particularly private business to find suitable economic roles (jobs) for the Indian are more immediately the cause.

5. The net effect of the cultural variables mentioned above was for the Indian to excel, on the record, in education, and to fail, in reality, in the social goals of education. Comparing the composite indices of manpower development it is notable that the correlations observed on a world wide scale by Harbison and Myers do not exist for Alberta's Indians. A high proportion of young people in secondary education does not imply a significant number of young people in college or technical training, nor does it imply the creation of a pool of skilled manpower. One fact, stressed above, indicating why no favourable developments transpire, is the imposition of a foreign culture upon the indigenous one, one closely tied to the environment by subsistence. This fact in turn relates to the findings of Harbison and Myers. Of the cultures (and nations) at the manpower development levels of the various reserves and agencies, only two were not tied aboriginally to a so-called "high" culture. The peoples of Cuba and Jamaica represent populations brought in *after* the indigenese were wiped out, or nearly so. Thus only these two represent a break in transition similar to that of the Canadian Indian. The other nation states are the modern representatives of peoples part of or subject to "high" cultures of antiquity. This, of course, gives even the peasant population a head start over persons descended from wandering hunters and gatherers in terms of cultural organization and sophistication.²⁰ Thus we can see why even countries such as Pakistan (index 25) and Iran (index 17) stand so clearly above the Alberta Indian (indices from 110 to 17) in the production of socially and economically valued persons. Education, in Pakistan and Iran, may represent foreign ideas and values, but, importantly, it is tied to the village here and now and to the cultural past. Alberta's Indian's education is not of his culture, not of his language, not of his past, not of his present.

6. Thus compulsory universal education for the Indian is in large measure a destructive failure. Sadly, the Indian leaders of today are, by and large, educated by chance into understanding the greater Canadian society. Those individuals who have profited from the extensive program of Indian education are largely women (who are only beginning to become recognized as leaders) and are largely alienated from the Indian enclave by their skills in the greater Canadian society. Thus, universal education has succeeded in divorcing the persons who could become effective aspirational models from those who might aspire. And, in the words of Paul Goodman (paraphrased), by connections, aspirations and manners Indian children get no jobs, Anglo-Canadian children get Anglo-Canadian jobs.

7. The above becomes more frightening when one realizes that a variable familiar to students of the underdeveloped nations of the world is now affecting the Alberta Indian people: the population explosion. Another reason for climbing welfare costs, unemployment, and migration is the vastly increased number of Indian youth today. Indeed, even with increasing migration reserve populations continue to grow by more than 10% per year.

Epilogue

One conclusion that might be drawn from the above discussion is that, for the Indian's own good, the reserve system must be destroyed and the young Indian brought into the Canadian "mainstream." One would do this at his peril! It supposes the same fallacy as did the early educators of Indians and, hence, the later ones: That through education, cultural differences may be quickly overcome and economic betterment reached. The implication of those who wish to now destroy the reserve system is that conditioning (learning) begins in the home, and if the home is no longer isolated on a reserve, but in a city, then better conditioning in urban existence will occur. This position neglects the intermediate step, that all little Indians have parents and that almost all of these parents, excepting those fifteen individuals with semi-professional and professional skills, are still oriented largely toward a reserve existence.

Other possible solutions, albeit ideologically hostile to the Alberta political environment, would seem less costly in individual terms. Governmental intervention on behalf of the Indian in local economies is necessary. Some self-sacrifice on the part of local private business leaders is necessary. And education, social life, and economic reality must converge into a program that provides logical outlets for native peoples in social, economic, and intellectual terms. Such outlets must be construed of today's realities, not mythical beliefs nor nostalgic hind-sight.

REFERENCES

- ¹ Anon. *The Education of Indian Children in Canada: A Symposium Written by Members of Indian Affairs Education Division, With Comments by the Indian People*. Toronto: The Ryerson Press, 1965. Appendix (C), "Copy of Treaty and Supplementary Treaty No. 7," p. 117.
- ² Katherine Hughes, pp. 287-288.
- ³ *Ibid.*, pp. 289-290.
- ⁴ *The Education of Indian Children in Canada*, Appendix "B", "Extract from the Indian Act, 1951." p. 108.
- ⁵ *Ibid.*, p. 109.
- ⁶ *The Education of Canadian Indian Children*, "Advancement in Indian Education," p. 57.
- ⁷ *Ibid.*, p. 50, p. 54.
- ⁸ Data from Indian Affairs Branch, Edmonton. Tabulated by author.
- ⁹ Indian Affairs Branch, n.d. Appendix "D".
- ¹⁰ Indian Affairs Branch, Administrative Division, "Facts and Figures". Ottawa, September, 1964, p. 20.
- ¹¹ Indian Affairs Branch, Edmonton. Tabulated by author.
- ¹² Frederick Harbison and Charles A. Myers, *Education, Manpower and Economic Growth: Strategies of Human Resource Development*. New York: McGraw-Hill Book Company, 1964, p. 13.
- ¹³ *Ibid.*, p. 14.
- ¹⁴ *Ibid.*, p. 27.
- ¹⁵ *Ibid.*

- ¹⁶ Indian Affairs Branch, Edmonton. Tabulated by author.
- ¹⁷ Indian Affairs Branch, Edmonton, n.d., also, Indian Affairs Branch, personal communication.
- ¹⁸ Paul Goodman, *Compulsory Mis-education and the Community of Scholars*. New York: Vintage Books, 1966, p. 52.
- ¹⁹ *Ibid.*
- ²⁰ Elman R. Service, *Primitive Social Organization: An Evolutionary Perspective*, New York: Random House, 1962. See: Algonkian and Athapaskan Hands, pp. 84-88, general statements, pp. 72, 108-109, and ff.

The authors of this report provide evidence in the field of science education to support the thesis that success is a more significant reinforcer of learning than failure. In this case the criterion of success and failure is in the context of the award of high or low grades in a subject and it is perhaps significant that the technique involves the issue of an unearned bonus.

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Achievement as a Function of Assigned Grades

Summary

This comparative study used as its subjects two matched groups of Grade VIII students whose science achievement placed them between the 10 and 35 percentiles. The experimental subjects received science grades bonused by 20 per cent of earned grade on ten successive bi-monthly science tests. These subjects showed a significantly greater gain in actual science achievement over the five-month duration of the experiment than did the control subjects.

The Problem

The supposition that the awarding of low or high school grades will motivate the recipients of such grades to more productive effort seems to constitute one of the chief reasons for awarding such grades on the part of many teachers. A host of studies of which, Sears,¹ Lewin *et.al.*,² and Wright³ might serve as examples seem to vindicate the belief that frustration does in fact increase endeavour. However, most studies of this nature use artificially induced frustration over short periods of time and thus leave the question as to the efficiency of grade-induced frustration unanswered.

More extensive work like that done by McClelland *et.al.*,⁴ pertains in part to the current problem. However, while such studies are success-

ful in generating theories and hypotheses around the effects of such phenomena as school grades, they provide little information as to their actual motivational value in the classroom situation. Perhaps Atkinson's formula: "Motive arousal = f (motivation disposition $\times$ incentive $\times$ expectation)"⁵ is more to the point for it provides a formula into which the low or high grade contender can plug his research data. Such data would, it is assumed, replace incentive in the formula since grades are alleged to provide incentive through the withholding or providing of reward and in this way increase motivation or "motive arousal."

If research has provided little evidence then, to vindicate the low or punitive grade enthusiast, it has done no better for the educator who might advocate more lenient grading. Yet, the more lenient grade approach would seem to be a more fruitful direction in which to seek vindication for, since Thorndike rescinded the negative aspects of his law of effect, learning theorists have generally been suggesting, and research has been confirming, that learning can be maximal in the presence of reward alone. Indeed it can be argued that the whole motivational structure underlying programmed instruction rests on this assumption.

Unfortunately, however, it is as yet impossible to measure or quantify a student's motivation for doing school work in any direct way; nor is it possible to measure the incentive induced by high or low grades. About the best one can do is to award given grades under given conditions and measure the subsequent achievement and infer from this achievement as to whether the grades awarded induced motivational change.

The present study, then, is designed to test the hypothesis that given grade changes will not affect the actual achievement of the recipients of these grades.

Subjects

All subjects used in the study were drawn from the 10th to 35th percentile achievement group enrolled in Grade VIII Science at Calgary's Colonel Irvine Junior High School for reasons which include:

1. Colonel Irvine was the only school available where, due to a team teaching approach, curriculum, instructional method, and teachers were held constant for all students in science for sufficient time to conduct the present experiment.
2. Grade VIII was chosen because at this level the student is beyond the "new school" atmosphere peculiar to Grade VII and has not yet reached the possible tensions created by the anticipation of final Grade IX Department of Education examinations.
3. Science was chosen as a curriculum area minimally affected by background knowledge obtained in previous grades, i.e., an area of study where changes in motivation could be most readily detected.

Achievement of Assigned Grades

4. Students below the 10th percentile in achievement were excluded because: (a) the school did not want its potential failures interfered with, and (b) students who had despaired of improvement were most likely to be located in this group.
5. Students above the 35th percentile in achievement were excluded because: (a) the potential for increased achievement and the possibility of bonusing grades became increasingly limited beyond this level, and (b) a sufficient number of subjects were obtained between percentiles 10 and 35.
6. The decision to use low achieving subjects with the resultant necessity of raising grades rather than using high achieving subjects whose grades could be lowered was made: (a) on the assumption that, since the low achievers had been under the motivational influences of poor grades for an extended period of time, achievement would be maximized if poor grades are in fact an incentive, and (b) to avoid the heterogeneous effects of lowered achievement feedback described by Sears, and (c) to avoid pupil and parental ill-will imminent in lowering school grades.

Procedure and Data

In November, 1965 either form A or B of the *Sequential Test of Educational Progress Science 3A* was administered to randomly selected halves of the 254 students comprising the Grade VIII science population of Colonel Irvine Junior High School. Those students scoring from percentile 10 to 35 inclusive were identified and matched as nearly as

TABLE I
COMPOSITION OF THE CONTROL
AND EXPERIMENTAL GROUPS
GIRLS

CONTROL				EXPERIMENTAL			
SUBJECT	AGE	I.Q.	S.T.E.P.*	SUBJECT	AGE	I.Q.	S.T.E.P.*
1	13.0	129	64	1	12.6	128	61
2	12.11	116	59	2	12.7	118	61
3	13.1	131	59	3	13.1	130	62
4	13.3	133	75	4	12.10	141	64
5	13.0	114	59	5	13.4	112	62
6	13.2	114	55	6	13.3	111	62
7	13.5	111	55	7	13.0	108	64
8	13.5	122	62	8	13.1	117	62
9	13.5	102	64	9	13.1	106	61
10	13.5	108	54	10	13.3	107	59
11	13.9	111	58	11	13.7	108	54
12	13.8	104	56	12	13.8	102	61
13	13.9	114	62	13	13.9	112	54
14	13.10	111	56	14	13.9	111	55
15	13.11	114	35	15	13.10	118	64
16	14.3	102	58	16	14.5	114	54
—	—	—	—	—	—	—	—
X	13.5	114.87	58.19	X	13.4	115.18	60

* in percentages

TABLE I—Continued

BOYS							
CONTROL				EXPERIMENTAL			
SUBJECT	AGE	I.Q.	S.T.E.P.*	SUBJECT	AGE	I.Q.	S.T.E.P.*
17	13.2	141	61	17	12.2	141	54
18	13.5	102	64	18	13.2	97	64
19	13.0	118	59	19	12.11	118	56
20	13.1	127	64	20	13.1	123	64
21	13.0	106	62	21	13.2	104	56
22	13.2	110	55	22	13.3	111	64
23	13.2	118	61	23	13.5	117	54
24	13.2	113	58	24	13.5	118	64
25	13.7	106	61	25	13.6	106	64
26	13.7	119	64	26	13.7	123	62
27	13.8	123	54	27	13.9	131	59
28	13.11	106	58	28	13.8	102	54
29	13.8	120	62	29	13.8	120	56
30	13.5	114	62	30	13.11	111	62
31	14.0	118	58	31	13.11	118	62
32	14.1	100	62	32	14.5	96	55
—	—	—	—	—	—	—	—
N 32 $\overline{X}$	13.5	115.06	60.31	N 32 $\overline{X}$	13.5	114.75	59.38
Combined							
N 64 $\overline{X}$	13.5	114.97	59.25	N 62 $\overline{X}$	13.5	114.97	59.69

possible in pairs on the bases of age, sex, I.Q. and science achievement. One member of each pair thus obtained was then randomly assigned to the experimental and the other to the control group.

Neither the teachers nor students involved in the study were informed of the S.T.E.P. scores or of the purpose of the study. On the same day as the S.T.E.P. was given, the 254 Grade VIII science students also responded to a locally developed forty-item, four-distractor, multiple-choice test based on the science work just completed. After item analysis and the discarding of poor items the scores on this achievement test were converted to percentages and returned to the science teachers for distribution to the students. The single exception to this procedure involved a 20 percent bonusing of earned scores for those students comprising the experimental group.

A similar curriculum-based forty-item achievement test was administered to the 254 Grade VIII students each subsequent two weeks until a total of ten such tests had been given. In each case the percentage scores on the good items were returned to the students via the teachers. In each case the scores earned by the experimental subjects were bonused by 20 percent.

Table II gives the actual mean percentage scores earned by the control and the experimental groups on each of these tests.

At the termination of the experimental period, control and experimental subjects responded to the equivalent form of the S.T.E.P. administered at the outset of the study. Table III summarizes the data collected through this and the earlier administration of the S.T.E.P.

TABLE II
SUCCESSIVE TEST SCORES BY GROUP AND SEX

Group	Test	1	2	3	4	5	6	7	8	9	10
Exp. Girls	X	64.7	60.1	59.6	64.1	54.7	56.6	59.0	60.1	65.1	59.5
	S	10.8	8.8	11.0	10.2	13.8	7.4	7.1	8.9	6.0	8.5
	N	16	14	16	59.5	56.4*	51.9	58.9	57.4	60.0	61.2*
Cont. Girls	X	65.5*	57.7	57.2	15	14	15	14	14	15	16
	S	7.3	10.4	11.4	10.3	9.9	4.2	9.7	7.5	7.2	7.9
	N	16	13	15	15	14	15	16	16	16	15
X diff.		.8	2.4	2.4	4.6	1.7	4.7	.1	2.7	5.1	1.7
P. of diff.		>.05	>.05	>.05	>.05	>.05	<.05	>.05	>.05	<.05	>.05
Exp. Boys	X	68.8	58.9	59.2	61.5	59.2	60.7	66.0	65.9	65.2	62.9
	S	12.0	7.1	10.5	10.4	10.3	5.7	7.8	8.9	5.7	7.6
	N	16	15	16	14	14	15	14	14	14	14
Cont. Boys	X	67.8	57.5	57.2	54.1	53.5	54.9	62.8	60.0	63.3	60.6
	S	15.2	10.8	8.4	7.2	11.6	9.3	8.2	8.6	7.9	4.9
	N	16	15	15	16	13	15	16	16	16	15
X diff.		1.0	1.4	2.0	7.4	5.7	5.8	3.2	5.9	1.9	2.9
P. of diff.		>.05	>.05	>.05	<.05	>.05	<.05	>.05	<.05	>.05	>.05
Exp. total	X	66.8	60.0	59.4	62.8	57.0	58.7	62.5	63.0	65.2	61.2
	S	11.4	8.0	10.7	9.2	12.0	6.4	7.3	9.0	6.0	8.1
	N	32	29	32	29	28	30	28	28	29	30
Cont. total	X	66.7	57.6	57.2	56.8	55.0	53.4	60.9	58.7	61.7	60.9
	S	11.2	9.8	9.9	8.7	10.7	6.3	8.6	7.4	7.3	6.2
	N	32	28	30	31	27	30	32	32	32	30
X diff.		.1	2.4	2.2	6.0	2.0	5.3	1.6	4.3	3.5	.3
P. of diff.		>.05	<.05	>.05	<.01	>.05	<.01	>.05	<.05	<.05	>.05

*Control group score higher than experimental group.

TABLE III
PERCENTAGE S.T.E.P. SCORES BEFORE AND AFTER
EXPERIMENTAL TREATMENT

		Before	After
Experimental Group	X	59.25	70.45
	S	7.83	5.44
Control Group	X	59.38	64.91
	S	8.61	7.41
	N	32	32
Diff.		.13	5.54
P. of Diff.		>.05	<.01 ($t = 3.42$)

Discussion and Conclusion

An examination of Table II confirms the equality of the science achievement of the two groups established by the first S.T.E.P. scores. In each of the nine subsequent tests the total experimental group scored higher than the control group. In five of these cases the difference proved to be statistically significant as did the overall achievement of experimental boys ($P < .01$) and girls ($P < .05$) separately as well as for the total experimental group ($P < .01$).

The data given in Table III permits a similar conclusion in favour of the experimental subjects ($P < .01$) where the before and after S.T.E.P. scores are concerned.

It is to be noted, however, that the differential gain in favour of the experimental group was more pronounced in the case of boys than girls ($P < .01$ and $< .05$ respectively). The same phenomenon is evident if the mean per test gain of the experimental over the control group is determined for boys (3.96) and girls (2.07) separately for the final nine achievement tests. It would appear then, that motivation to achieve in science may be more easily induced in Grade VIII boys than girls within the limits of the techniques employed in the present study.

In conclusion, the data obtained through the present procedure makes it impossible to accept the hypothesis that given grade changes will have no effect on actual achievement. The generalization inherent in having to draw this conclusion insofar as the classroom situation is concerned would seem to be (1) that poor achievers increase their achievement for no other reason than that they are informed that they are improving thus (2) undermining the supposition that the awarding of poor grades will motivate the recipients of such grades to maximum effort.

REFERENCES

- ¹ P. S. Sears, "Levels of Aspiration in Academically Successful and Unsuccessful Children," *Journal of Abnormal and Social Psychology*, 35, 1940.
- ² K. Lewin, et al. in J. McV. Hunt (ed.), *Personality and Behaviour Disorders*, New York: The Ronald Press Co., 1944, Vol. I, Chapter 10.
- ³ H. F. Wright, "Contribution to Psychological Theory," *The Influence of Barriers Upon Strength of Motivation*, Durham, N.C.; Duke University Press, 1937.
- ⁴ D. C. McClelland, et. al. *The Achievement Motive*. New York: Appleton-Century-Crofts, Inc., 1953.
- ⁵ J. W. Atkinson, "Motivational Determinants of Risk Taking Behaviour," *Psychological Review*, 64: 359-372.

This article is a response to and criticism of Michael Scriven's "Student Values as Educational Objectives" which appeared in the June, 1966 issue of this journal. Dr. Vandenberg has composed it in response to Dr. Scriven's request for criticism and he argues that the method of validation of values proposed by Scriven depends upon the acceptance of a social philosophy in such a way that the empirical study of human behaviour does not necessarily justify the teaching of values.

* * *

Dr. Scriven and the editor of this journal appreciate Dr. Vandenberg's willingness to respond. The many problems associated with justification for teaching values are pertinent to research and important for education. It is hoped that other scholars will follow the lead given by Vandenberg.

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Student Values?

In "Student Values and Educational Objectives"* Michael Scriven argues from the analogy of the public health officer and medical doctor to the educational conclusion that values can and should be taught because certain values can be established with scientific warrant as objectively valid. In the course of his argument he asserts that the "properly trained social science specialist is better equipped than the average citizen to decide on the moral rights and wrongs of issues" to the purpose of suggesting that moralities can be evaluated in terms of basic needs such that the content of the social studies can be established in order to teach values through considering the problems involved as problems of the applied social sciences. I wish to debate the relevance of the analogy to the educational problem, suggest that there might be "better equipped" people than social scientists to decide on the moral rights and wrongs of issues, and indicate how Scriven's article does not seem to have confronted the central issue.

The analogy of the health officer and medical doctor seems to be inadequate because it cannot be said that their knowledge of the technology of the maintenance of health results in a scientific value judg-

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ment. Both are hired by someone else to accomplish a given task with a clearly defined aim. The value issues are all decided by the time either is hired to perform the task that requires his scientific knowledge. Then the health officer's "condemnation" and the doctor's "prescription" fall within the realm of hypothetical judgment. Simply because health has been chosen ahead of time does not remove the hypothetical and technological nature of their judgments, for neither is entitled as a specialist to say that health is universally good and neither receives blame if his advice is not carried out by the client. Scriven himself seems to find that suicide is possibly justifiable in certain cases and that this justifiability "really can be established." Irrespective of its justifiability, it would seem reasonable to infer that suicide is in each and every case a negation of "health." If it is sometimes justifiable, then the value of health cannot be said to be objectively ascertained nor unquestionably acceptable. Neither can it result from scientific inquiry. Then classifying the jobs of the health officer and doctor as technologists is most important, contrary to Scriven's assertion, because either could occupy his spare time murdering little children and yet perform his job admirably. Either would be fired, moreover, for incompetency as a technologist, for which no operative or professed values would compensate.

But who hires social scientists or teachers to function within a previously accepted goal such as health? Classifying their jobs is equally important. Discussion of the basic needs of the people of a society does not establish the fulfilment of those needs as a goal without either public agreement or a cosmologically grounded need to live. If the former is obtainable, Scriven's argument is redundant and superfluous. The latter is not obtainable if Scriven is correct in saying that suicide is sometimes justifiable. Without a demonstrable need to live, fulfilment of basic needs is an arbitrary value judgment, justifiable only by people's decisions to live in certain ways. And if treason is sometimes justifiable, as Scriven also suggests, then a dominating ideology within a given society does not suffice to establish scientific warrant for either the social scientist's or the teacher's acceptance of external goals such as the doctor's acceptance of health. If treason is sometimes justifiable, then the possibility of treasonous actions on the part of the social scientist and the teacher is sometimes justifiable. The completion of such actions may not be justifiable, but if treason itself is sometimes justifiable, then no previously agreed upon goal could define ahead of time the completion of the kind of work that both social scientists and teachers are hired to do. I think Scriven would agree and also that this is part of his point.

The acceptance of an external goal by social scientists or by teachers is either political, ideological, or philosophical. It should be unnecessary to speak to the first two of these. For the social scientist to apply his science, however, is for him to leave the bounds of his discipline and

enter into the area of philosophical anthropology. There may be no such thing as *applied* social science: either it turns into a technology when it attempts to achieve previously designated goals or it turns into normative anthropology as long as suicide and treason (Scriven's illustrations) are sometimes justifiable, for then neither the value of living nor of any society or its ways can be assumed to be valid by a social scientist as such. When he attempts to apply his knowledge, it can only be done within the framework of some idea as to how to live. It amounts to a giving of recommendations to other people concerning how they should live. This is not ascertainable apart from some previously accepted goal from some source outside of any science. One can be thankful that Scriven himself did not obtain his values from the social sciences.

In order to show how the social sciences could scientifically warrant values so that values could be taught, Scriven suggested a validation procedure resting upon an acknowledged egalitarian utilitarianism, i.e., upon a social philosophy, upon a *vision* of the good life in the good society. This is precisely the condition that makes applied social science possible. It is not clear, however, whether Scriven is to be praised for showing the way, or whether he is to be blamed for showing only one way and for attempting to indicate that it is probably the best way. Although Scriven may be right when he suggests that it is the social scientists' particular skills that make possible the ascertaining of the wants, needs and ideals of the people in a society, this is more controversial than it may sound. Voting booths do have their merits. It is not quite understandable, furthermore, how or why the findings of the social scientist can be used to tell people what they should want, need and value, for they have just told him, unless there are additional values smuggled in somewhere, as in Scriven's egalitarian utilitarianism. Then ascertaining which of the present values are not acceptable requires a criterion from social philosophy. Which? Shall each social scientist develop his own vision of the good society and "apply" his discipline so as to bring it into being? On whose authority? What a "healthy" society might be is a far more controversial matter than Scriven lets it be known.

Scriven's utilitarianism is inadequate because of the facility with which it permits labelling all opposing views "undemocratic." They may be, and Scriven may be right in suggesting that this is quite proper. It nevertheless renders Scriven's validation procedure unfalsifiable and uncriticizable. Whoever contests it is "undemocratic." But is it not undemocratic to label opposing views "undemocratic."

To what uses could such a validation procedure be put? Scriven, to his credit, acknowledged his own presupposing of a certain unvalidated procedure and his own commitment to what he says are the principles of egalitarian utilitarianism and he freely acknowledged that it is *this commitment* that makes *his* meta-application of the social sciences pos-

sible. It is reasonable to infer that some similar commitment is the *sine qua non* of the application of any science. Such a commitment, however, begs all the value questions, at least to those of us who are "sharp specialists" and quite wary of "nineteenth century naiveté." It happens to be the twentieth century, and it simply cannot be the case "that the question of which curriculum or educational procedures a certain school *should* adopt is simply a part of the professional social scientist's task to *discover*", for it is *not* the case that "the *problem* is just a problem in the applied social sciences". This could be the case only if one accepted or shared Scriven's *commitment* to egalitarian utilitarianism as he describes it or to some other social philosophy.

It might not be possible even then. Compare the following three statements made by Scriven: (1) "The basis of morality is simply a matter of the relative social efficiency of different attitudes towards the rights of others, and . . . it is all we can say about morality." (2) "Moral standards are simply the behavioural imperatives associated with a particular kind of social institution . . ." (3) ". . . the empirical punch behind the morality behind the law and the institutions which incorporate this country's [U.S.A] virtues and permits its vices." Because it is not at all clear how the "attitudes" of (1) could be formed within the institutions of (2) as long as there are the "vices" as in (3), it is not at all clear how social scientists could assist by indicating how the attitudes could be most effectively formed within existing institutions. That institutions do in fact have a morality behind them as in (3) that is conducive to the development of morality as in (1) is belied by (3). Scriven had alluded to this "profound" difficulty within the naturalistic, utilitarian approach to ethics, yet said that no criticism of John Stuart Mill has been "worthy" of his contribution. That may be, yet one could argue quite justifiably at a level equal to Mill's that *no* institution has ever been set up on utilitarian principles. One could argue equally justifiably that *no* institution has ever been reformed on utilitarian principles either, because those reforms that were made under its banners came about only when power was confronted with power and that the utilitarian principles were less effectual than the power employed. Then the reform might as well have occurred under different principles. To say that existing institutions do in fact promote the general happiness as in (2) and (3) is not verifiable and requires faith, trust, naiveté, hope, charity, blindness, optimism, chauvinism, or some such.

Sharing Scriven's commitment to utilitarianism, in other words, is difficult because its hope that institutions should somehow conduce to the general happiness seems unfounded in respect to how institutions are and can be changed. This is not merely the "opinion" of the present writer but a "good reason" for present difficulties with utilitarianism that Scriven surely must know about. That educational procedures and

curriculum become a problem for social science investigation follows only from Scriven's commitment to a theory of the good society that is very controversial and open to question. Then not only does any attempt to apply the social sciences depend on what is at the present time a commitment, and only a commitment, to a vision of the good society, but it requires a choice among alternative social philosophies in order to determine what values are to be taught, for any validation procedures stand or fall with the principles of some one social philosophy. Then I am glad to debate the issue of teaching values with Scriven at his request because I am inclined to think that both he and I are better qualified to debate the basic issue of his commitment to utilitarianism than social scientists or teachers are apt to be. I suspect that he and I are also better qualified to debate the issues of whether or not any particular scientific method is in fact "the most effective *way* of arriving at the truth" and whether or not "we can *evaluate moralities* . . . in terms of basic needs which provide the foundation of all moralities." I also suspect that both he and I are better qualified to debate the issues of whether or not social science is at all possible, because of the problem of induction, and whether or not it makes any sense at all to talk about basic needs apart from a cosmologically grounded need to live. I suspect that both he and I are better qualified to debate these issues than most social scientists and perhaps most teachers because I suspect that they are mostly unaware that these are philosophical issues in which one's own preferences are beside the point. They are much more controversial than Scriven lets it be known. His egalitarian utilitarianism is less defensible than is alleged: it could be very dangerous in hands less qualified than Scriven's. Why social scientists would want to commit themselves to it in order to apply their disciplines is not at all clear, but without some such external goal such application cannot begin.

That teachers do not operate within a previously accepted goal analogous to that of "health" is even clearer than the social scientists' lack thereof. What Scriven overlooked was any consideration of the characteristics of the pedagogic, educating relationship. Even if one accepted his validation procedure and thereby managed to justify the values to include, or even if the direction in which the student's values were to be changed were accepted as correctly justified by Scriven or any other way, there might still be some difficulties with conscious attempts to change student values. Suppose one could distinguish modes of teacher conduct in which the teacher tried to change student values from those modes in which the teacher did not try. Suppose one were to find something unethical and anti-educational about the former, perhaps something peculiarly successful about changing student values about the latter. What if most success came from not even trying? Or from the increased value of the pedagogic relation to the student when the teacher

was as uncertain about values as the “sharp specialists” are? That is, the analogy with the medical profession might be interpreted differently: are doctors more medically successful when they do not chase down patients who miss appointments or do not make them in the first place when they apparently should? Is he then less likely to induce hypochondria and dependency? Is the matter of student values open to a condition analogous to hypochondria and dependence? If so, then public education does not presuppose the imposition of a behavioural value system in order for the teacher and pupil to perform assigned roles as in “discipline” as Scriven suggests because there may be no ascribable roles: what the ascribable “roles” should be is the issue Scriven failed to confront. That there might be distinctly pedagogic relations not ascribable to “roles” that might prohibit the teacher’s attempting to change student values because its coming into existence might depend upon the avoidance of such attempts is nowhere considered by Scriven. It is not so much that the article did not confront this issue, but that the external view employed prohibited asking the question concerning the justification of changing student values.

The considerable interest in language and the degree to which it influences our view of the world is reflected in this article. The author attempted to study and relate the tendency to choose "all-inclusive" terms to intensity of rating "high" and "low" meaningful words. Significant correlations were obtained between the major variables. Implications are drawn concerning the manipulation of meaningfulness and the measurement of response set.

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All-Inclusive Conceptualization and Intensity Meaningfulness: Research Note

A number of investigators have argued for the importance of the linguistic content variable of all-inclusive conceptualization. Hayakawa has observed that the individual who is too all-inclusive is likely to misjudge the environment, since he will not be flexible enough to change with a changing environment.¹ Johnson has suggested that such a tendency may lead to various personal maladjustments.² Korzybski has argued that all-inclusive conceptualization is one of the major pitfalls of language which may lead to very general misevaluations of reality.³ Snider has pointed out the importance of such a variable in personal counselling.⁴

All-inclusive conceptualization is defined as the tendency to respond in terms of absolute or overgeneralized language. It is the tendency to prefer to use such terms as 'all', 'always', 'never', 'forever'. This study is an initial attempt to relate all-inclusive conceptualization to intensity of meaningfulness. The rationale for the study inheres in the observation that the individual who over-generalizes is paying less attention than others to the unique meaningful qualities of the environment. It should follow that all-inclusive conceptualization is a correlate of meaningfulness. Thus the general orienting hypothesis of this initial study was that those who respond less intensely to meaningfulness will tend toward all-inclusiveness in language, while those who respond more intensely to meaningfulness will tend toward flexibility in language.

Method

The subjects of the study consisted of 68 introductory educational psychology students at the University of Alberta, Calgary. Subjects were presented with two tasks. In one they were asked to rate two "high meaningful" words (words to which there are a high number of associations) and two "low meaningful" words (words to which there are few associations) on three semantic differential scales. Noble's⁵ high meaningful words 'kitchen' and 'money' and low meaningful words 'tarop' and 'balap' were presented to be rated on the semantic differential scales good-bad, strong-weak and active-passive.⁶ The second task was to choose a word from each of two lists of words judged to be all-inclusive: *all*, *none*, *always*, *never*, and flexible: *many*, *some*, *few*, *often*, *sometimes*, *seldom*. The two words lists with their assigned values were as follows:

2	1	0	1	2
all	many	some	few	none
always	often	sometimes	seldom	never

The restricted number of words used is a function of the criterion of all-inclusiveness. Several attempts at constructing other five-word lists which were as "pure" as those above met with failure, and it was decided to use a clear but somewhat attenuated criterion of all-inclusiveness. The word lists were also constructed so as to "cognitively" represent the five points on the five point semantic differential scales, that is, where *all* = 2, *many* = 1, *some* = 0, and so on. It was felt that if there is a relationship between intensity of meaningfulness and all-inclusiveness it would be more likely to show where the cognitive elements matched the rating scale elements. The words in the lists were chosen so as to be equated for their frequency of use, since there is a high correlation between Noble's meaningfulness measure and frequency of use as shown in Thorndike-Lorge word counts.⁷ All the words in the lists occur more than 100 times in a million except 'seldom' which occurs 50-100 times in a million. This control of word frequency should ensure that choices of all-inclusive words were not based on frequency of occurrence.

The lists were presented in a counter-balanced design in which one half of the subjects were given four different scrambled versions of the *all* list and the *always* list, with the *all* lists first and the *always* lists second, while the other half of the subjects were given lists balanced in the opposite direction.

The "high-meaningful" and "low-meaningful" words were presented on one sheet of paper in the order 'kitchen', 'tarop', 'money', 'balap', with the three semantic scales presented below each word. Scores for each subject were obtained by averaging the two responses to the lists of all-inclusive terms. A subject could receive a score of 0, 1, 2, 3 or 4 for "all-inclusiveness". Scores were averaged on the semantic differential scales

for the “high-meaningful” and “low-meaningful” words where the scales have five positions as follows: good 2 1 0 1 2 bad, thus giving a score for any one word from 0 to 6.

Results

The subjects were divided into two categories on the basis of the difference in their scores on the “high meaningful” and “low meaningful” words. This procedure assumes that those subjects who show the lower difference between their scores on “high meaningful” and “low meaningful” words (L_m subjects) are responding less intensely to meaning. According to the general hypothesis proposed, these subjects should show a greater preference for all-inclusive terms than those subjects who show a more intense differentiation between “high meaningful” and “low meaningful” words (H_m subjects). These latter subjects were considered to be exhibiting a greater intensity of response to meaningfulness and it was hypothesized that such subjects would show a preference for the more flexible terms.

Table I shows the result of comparing the H_m and L_m subjects on their all-inclusive scores.

TABLE I
A COMPARISON OF H_m AND L_m SUBJECTS ON ALL-INCLUSIVE
CONCEPTUALIZATION SCORES

Category	M	SD
H_m	1.47	1.12
L_m	2.29	1.26

$P < .001$

As Table I shows, the obtained difference is highly reliable. The L_m subjects show more preference for all-inclusive terms than do H_m subjects. To further clarify this finding Pearsonian product-moment correlations were obtained for the total group and for H_m and L_m subjects between all-inclusive conceptualization scores and the other major variables: score on “high-meaningful” words, HM_m ; score on “low-meaningful” words, WL_m ; total score on “high” and “low-meaningful” words, TW ; the difference score between “high” and “low-meaningful” words, DW . Table II presents these findings.

TABLE II
CORRELATIONS BETWEEN ALL-INCLUSIVENESS SCORES
AND HIGH-MEANINGFUL WORDS, LOW-MEANINGFUL
WORDS, TOTAL WORDS AND DIFFERENCES IN WORDS

Category	N	WH_m	WL_m	TW	DW
H_m	34	.08	.37**	.33*	-.16
L_m	34	.20	.25	.30*	-.13
Total	68	.11	.22*	.29**	-.12

* $P < .10$

** $P < .05$

The overall pattern of correlation is worth noting. The negative correlation between difference scores and AIC further supports the hypothesis in that the greater the distinction made by subjects between meaningful and meaningless material the more they tended to choose flexible language. The overall pattern suggests that it is with the intensity of making a distinction between "high meaningful" and "low meaningful" material that all-inclusiveness is related.

Discussion

The causal relationship between all-inclusive conceptualization and meaningfulness is not clear from this initial study, but it is reasonable to suppose that where there is little meaningfulness for the individual he begins to overgeneralize and to prefer all-inclusive conceptualization. Such might be the case where stimuli are ambiguous or where tasks are too difficult. The converse may also obtain. The individual who is reinforced for all-inclusiveness may come to see less meaning in the environment. All-inclusive and flexible language may be operants through which we can manipulate meaningfulness. The present study suggests that an experimental approach to attempt to clarify the causal relationships between meaningfulness and all-inclusiveness would be fruitful. It would also be useful to cross-validate the present study using varieties of all-inclusive measures and varieties of measures of meaningfulness.

The measure used in this study for intensity of meaningfulness seems a likely measure for other variables. We may, for example, consider that relative intensity of response to meaningfulness is actually a measure of "response set", since subjects with a low differentiation between "high-meaningful" and "low-meaningful" stimuli are responding more in terms of their own sets than in terms of the content of the stimuli. The L_m group of this study might be more accurately described as a "response set" group. This would suggest that perhaps all-inclusive conceptualization is related to test response set or response sets of other sorts. Since relatively few cognitive or language variables have been related to response set, an investigation of the relations of all-inclusive conceptualization to response set is warranted.

REFERENCES

- ¹ S. I. Hayakawa, *Language in Action* (New York: Harcourt, Brace, 1943).
- ² W. Johnson, *People in Quandaries* (New York: Harpers, 1946).
- ³ A. Korzybski, *Science and Sanity* (Lakeville, Conn.: The Institute of General Semantics, 1948).
- ⁴ J. G. Snider, "Some Correlates of All-Inclusive Conceptualization in High School Pupils", (Unpublished Doctoral Dissertation, Stanford University, 1964).
- ⁵ See B. J. Underwood and R. W. Schulz, *Meaningfulness and Verbal Learning* (Chicago: Lippincott, 1960).
- ⁶ C. E. Osgood, G. J. Suci and P. H. Tannenbaum, *The Measurement of Meaning* (Urbana, Illinois: U. of Illinois Press, 1957).
- ⁷ E. L. Thorndike and I. Lorge, *The Teacher's Word Book of 30,000 Words* (New York: Columbia University, 1944).

In this article the author reports a research study which uses age, Detroit Intelligence Test Scores, Socio-Economic status, Pre-school instruction and Sex, as variables in a Multiple Linear Regression designed to predict achievement scores in word recognition, paragraph reading and arithmetic. The subjects of the study were drawn from a population of 3810 grade one children in Edmonton. The study concludes with some tentative conclusions relative to the efficiency of each of the predictors.

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Prediction of Grade One Achievement

In September, 1963, the Detroit Beginning First-Grade Intelligence Test was administered to 5,025 children entering grade one in the Edmonton Public Schools, and achievement tests were administered later in the school year. The 3,810 subjects of this study were all of the 5,025 pupils who did not change school or move away during the year, and for whom achievement scores were available. Much of the reduction in size from 5,025 to 3,810 was due to improper recording of achievement scores which precluded comparison (e.g., letter grades). Portions of the statistical analysis involved two samples, of sizes 520 and 653, from the total population of 3,810. (The sample of 520 consisted of subjects 2,765 to 3,532, while the sample of 653 consisted of subjects 1 to 867.)

For each child, information was available on five predictor variables:

- (1) Age in months as of September, 1963.
- (2) Intelligence Test Scores—Two scores, interconvertible on the basis of age, were available:
 - (a) Raw score on the Detroit Beginning First-Grade Intelligence Test.
 - (b) The Detroit Beginners' Deviation I.Q. (DBD score), normed on the 5,025 pupils of whom 3,810 are the subjects of this study.¹ Raw score and age (4 intervals from 68 to 80 months) suffice to determine the DBD score.

Distribution of scores on the test is negatively skewed for age-appropriate local populations, since there are too many

easy items. Nevertheless discrimination of all except the very brightest children appears to be satisfactory. The test manual reports a test-retest reliability of 0.76 and a correlation of 0.76 with the Stanford Binet (N = 116).

(3) Socio-Economic Status: lower, middle, or upper.

Each child was assigned a socio-economic status on the basis of school attended. Three authorities familiar with the Edmonton School System were asked to classify each school as lower, middle, or upper socio-economic class. Only those schools which all three judges agreed should be classified lower or upper were so classified, and all others were designated as middle. As a measure of socio-economic level the method is not wholly satisfactory and one might prefer to call this variable "location of residence".

(4) Pre-School Instruction: none, play school or kindergarten.

The subjects were classified into three categories; no formal pre-school experience, attendance at play school and attendance at kindergarten. As play school and kindergarten curricula are not standardized there may be considerable variation within each category.

(5) Sex: girls or boys.

The distribution of the 5,025 pupils by age, by Detroit score, and by group has been given elsewhere.² A breakdown of this study's population of 3,810 by group membership on the categorical predictors is given in Table I.

TABLE I
SOCIO-ECONOMICS STATUS AND PRE-SCHOOL EXPERIENCE

Pre-School Experience	Lower		Middle		Upper		TOTAL
	Girls	Boys	Girls	Boys	Girls	Boys	
None	228	212	626	617	46	43	1,772
Play School	86	109	494	553	72	53	1,367
Kindergarten	21	35	214	245	70	86	671
TOTAL	335	356	1,334	1,415	188	182	3,810

ACHIEVEMENT CRITERIA

Three separate measures were used as criteria of grade one achievement. All were administered during the normal testing program in the Edmonton Public Schools in the latter part of the 1963-1964 school year.

(1) Edmonton Public School Board Word Recognition Test* (Revised, 1964):

*No data on reliability or validity of this test are available; norms are currently being established.

This test consists of two parts. Part A (Word Recognition) constitutes thirty-nine items, each of which is a picture of some object and four printed words, only one of which bears a close association with the object. There is a correction for guessing. Part B (Vocabulary) requires more reading comprehension. There are twenty-two items each in the form of an incomplete definition, with a choice among three alternatives to finish the sentence.

(2) Gates Primary Paragraph Reading Test:

This test contains twenty-six items of increasing difficulty, each of which requires reading a short paragraph story including a command to make a specified mark on a picture connected with the meaning of the paragraph.

(3) Arithmetic final score:

For most of the children, this score was obtained from EPSB Seeing Through Arithmetic Grade One Final Test. This test has six parts: recognition of groups; counting; money; measuring and group, positional meaning; time and fractions. The instructions to the pupils are sometimes excessively complicated. Considerable leeway is permitted in administration of this experimental test.

For some of the classrooms other final arithmetic scores were reported. Whatever score the school reported was used for the purposes of this study. (Maximum score: 100).

MULTIPLE LINEAR REGRESSION

The statistical technique of multiple linear regression, in combination with computer programs to do most of the work, is a powerful tool in the investigation of relationships among a set of predictors, categorical or continuous, and a criterion.

Starting with a set of predictor variables and one criterion variable, the general procedure is to assume that the criterion can be predicted by some linear-weighted combination of the predictors. The weights used in this linear combination are determined such that the sum of the squared errors made in predicting, is a minimum. Such a model may be used even when ones and zeros form a predictor variable.³

In order to determine the efficacy of the prediction a multiple correlation coefficient may be used since this measure is related to the amount of error involved. In order to assess the contribution of a given predictor towards predicting the criterion, the variable under study is first included in the model, then excluded, and the two squared multiple correlation coefficients noted in each instance. The model or weighting system containing the variable is referred to as the unrestricted model

while the weighting system which does not include the variable is the restricted model.*

An F test (under certain assumptions) can be used to determine whether the difference in the two squared multiple correlations represents a statistically significant change. If a significant change is observed, it is attributed to the variable under study thus indicating its importance to the study.

Model 1 and 2 are the unrestricted and restricted models respectively. Each model produces a squared multiple correlation, R_1^2 and R_2^2 . The contribution of the predictor X_p is investigated by determining the significance of $F = [(R_1^2 - R_2^2) / df_1] / [(1 - R_1^2) / df_2]$, where df_1 and df_2 are degrees of freedom for the numerator and denominator respectively.

Curvilinear models can readily be generated by prior transformation of variables. Interaction effects between predictors are represented by including products of predictor variables in a regression model. All analysis of variance and covariance designs are contained within the more general multiple regression approach. The PERSUB program (PERSUB, 1964) permits the computer to handle this within a simple and convenient format.

RESULTS AND DISCUSSION

The prediction of achievement test scores in word recognition, paragraph reading, and arithmetic for Edmonton grade one children on the basis of five of the predictors—age, Detroit Intelligence Test Score, socioeconomic status, pre-school instruction and sex—were the objective of this study. The product-moment correlation ($N = 520$) among Detroit raw score, Detroit deviation I.Q. (DBD) score, age, and the achievement criteria are shown in Table II. Clearly, age and intelligence are very significant predictors of achievement—older or more intelligent children are higher achievers than younger or less intelligent children. The correlations between the Detroit tests and the achievement criteria are significantly higher than those reported by Romaniuk⁴ predicting grade one achievement in Jasper Place from the Metropolitan Readiness Tests. However, the latter tests were given in June, three months prior to admission to Grade I and therefore the comparison may not be valid.

The Detroit raw score predicts arithmetic achievement better than the DBD score ($p < .01$). This is to be expected, since the DBD score is derived from the raw score by correcting for the child's age. We can see

*Two models required to study the contribution of variable X_p to a criterion Y may be written as:

Model 1 $Y = A_0 + A_1X_1 + \dots + A_pX_p + \dots + A_nX_n + \text{error}$, and
Model 2 $Y = A_0 + A_1X_1 + \dots + A_nX_n + \text{error}$.

TABLE II
INTERCORRELATIONS AMONG PREDICTORS AND CRITERIA

Variables	Detroit Raw Score	Detroit Deviation IQ (DBD)	Word Recognition	Paragraph Reading	Arithmetic	Age
Detroit Raw Score	1.	.928	.488	.506	.646	.261
Detroit Deviation IQ (DBD)	.928	1.	.480	.480	.585	-.005
Word Re- cognition	.488	.480	1.	.793	.627	.150
Paragraph Reading ...	.506	.480	.793	1.	.580	.186
Arithmetic ...	.646	.585	.627	.580	1.	.146
Age	.261	-.005	.150	.186	.146	1.

from Table II that age is an effective predictor of Detroit raw score as well as achievement. The leads us to ask:

- (1) Of grade one Edmonton children with the same Detroit raw score, do older ones achieve more than younger ones?
- (2) Of grade one Edmonton children with the same Detroit deviation I.Q. (DBD) score, do older ones achieve more than younger ones?

Regression analysis (Table IV, row sets 1 and 2) answers the first question in the negative, and the second question in the affirmative. (In these regression models the children are equated not only on Detroit score, but also on socio-economic status, preschool instruction, and sex.) Apparently, using the Detroit raw score as a predictor is treating it like an initial achievement test, and so age makes little difference. The deviation I.Q. score is corrected for age, and that is exactly why age is a significant predictor in the presence of I.Q. at this level. One may conclude that younger children do as well as older children in grade one, if both received the same raw score on the Detroit test.

If the I.Q. concept is truly useful, we would expect the answer to the second question to be reversed for achievement later in the children's school careers, and I.Q. would become a better predictor than raw score.

The mean achievement scores for each categorical predictor are shown in Table III, (N = 3,810). In general, pupils of higher socio-economic level were better achievers than those of lower level, and children who attended play school or kindergarten were also higher achievers than those who did not. Girls surpass boys.

TABLE III
GRADE ONE ACHIEVEMENT : MEAN SCORES BY GROUPS
N = 3,810

Predictor	Group	Par. Reading	Achievement Criteria		
			Word Rec.	N	Arithmetic
Socio-Economic Status	Lower	691	55.0	17.34	76.5
	Middle	2,749	62.9	18.83	78.1
	Upper	370	64.8	19.83	83.1
Pre-School Instruction	None	1,772	58.4	18.11	75.8
	Play School ...	1,367	63.9	19.16	79.9
	Kindergarten	671	67.5	19.15	80.1
Sex	Girls	1,857	65.6	19.58	79.4
	Boys	1,953	57.8	17.80	77.4

These results are not surprising nor difficult to explain, but there may be alternate explanations. Children of low socio-economic status are well known to score relatively low on intelligence tests,⁵ at least on verbal subtests, so this leads us to inquire: Is socio-economic status a factor in the grade one achievement of Edmonton children of the same intelligence?

The regression analysis shown in Table IV, row set 3, and Figure 1, answers this question in the affirmative. This seems to indicate that there are powerful factors operating to affect the achievement of children of different social classes differentially. One need not search far for such factors. Need achievement is perhaps the most likely-looking possibility, as well as other values and attitudes differing among social classes.

Regarding the effect of pre-school instruction upon achievement, one wonders from looking at Table I whether this may arise from the circumstance that social class, known to influence achievement, is an excellent predictor of enrollment at play school or kindergarten. This leads to the question: Does attendance at play school or kindergarten influence grade one achievement of Edmonton youngsters of the same socio-economic status?

The regression analyses reported in Table IV, row sets 4 and 7, help us to answer: no, not significantly, although most of the results tend in that direction. Approximately the same numbers emerged from analysis of the sample N = 653 as well, on this same question.

These results do not depreciate the value of pre-school instruction for school readiness. Pre-school instruction is a significant independent predictor of score on the Detroit test as shown in Table IV, row set 8, (which shows also the independent effect of age, socio-economic status,

TABLE IV
REGRESSION ANALYSIS RESULTS

Row Set	Predictor	Criterion	RSQ full	RSQ restricted	df	F	P
1	Age, in presence of: Detroit raw score, SES, PSI and sex	Word Rec.	.2962	.2954	.06	1/512	NS
		Par Rdg.	.2996	.2964	.23	1/512	NS
		Arith.	.4462	.4457	.05	1/512	NS
2	Age, in presence of: Detroit deviation, IQ (DBD), SES, PSI and sex	Word Rec.	.3114	.2904	15.60	1/512	<.0001
		Par. Rdg.	.3070	.2746	24.00	1/512	<.0001
		Arith.	.3926	.3712	18.10	1/512	<.0001
3	SES, in presence of: age, Detroit raw score, PSI and sex	Word Rec.	.2962	.2635	11.90	2/512	<.001
		Par. Rdg.	.2996	.2694	11.00	2/512	<.001
		Arith.	.4462	.4316	6.75	2/512	<.01
4	PSI, in presence of: age, Detroit raw score, SES and sex ...	Word Rec.	.2962	.2892	2.54	2/512	>.05
		Par. Rdg.	.2996	.2977	.69	2/512	NS
		Arith.	.4462	.4456	.28	2/512	NS
5	Detroit raw score, in present of: age, SES, PSI and sex	Word Rec.	.2962	.1274	123.00	1/512	<.0001
		Par. Rdg.	.2996	.1131	136.00	1/512	<.0001
		Arith.	.4462	.0780	340.00	1/512	<.0001
6	Sex, in presence of: age, Detroit raw score, SES and PSI ...	Word Rec.	.2962	.2831	9.53	1/512	<.01
		Par. Rdg.	.2996	.2925	5.22	1/512	<.01
		Arith.	.4462	.4395	6.23	1/512	<.01
7	PSI in presence of: SES	Word Rec.	.0805	.0700	3.93	2/515	>.05
		Par. Rdg.	.0632	.0628	.12	2/515	NS
		Arith.	.0572	.0498	2.02	2/515	>.05
8	(In presence of the others.) Detroit Raw Score	SES	.1116	.0432	39.50	1/513	<.0001
		PSI	.1116	.0967	4.30	2/513	<.02
		Sex	.1116	.0998	3.43	2/513	<.05
		Sex	.1116	.0986	7.50	1/513	<.01

Note: RSQ = squared multiple correlation
full = unrestricted model
SES = socio-economic status
PSI = pre-school instruction

and sex in predicting Detroit test score). The fact that pre-school instruction does not independently predict grade one achievement would seem to indicate that children who did not attend playschool or kindergarten caught up with those who did by the end of grade one. The effect of pre-school instruction is apparently to better prepare children for school; it appears to have little effect on grade one achievement.

An independent research study with random assignment to treatment groups and careful investigation of all relevant factors would be desirable, to reach more definite conclusions on the effectiveness of attendance at play school or kindergarten.

Finally, we consider sex differences in achievement. One might begin by postulating genetic differences in rates of maturation (or even in

natural cognitive endowment) in order to explain the superior achievement of girls. It is true that boys score lower than girls on the Detroit test,⁵ so perhaps this difference is sufficient to account for their differential grade one achievement. Specifically: Do Edmonton boys and girls who scored equally on the Detroit Test achieve differently in grade one?

The regression analysis of row set 6, Table IV, tells us they do. Boys of the same Detroit intelligence as girls still do less well on verbal achievement, but, interestingly enough, do better on arithmetic. It could be that the Detroit test taps verbal ability more than arithmetic (only one of 10 subtests is directly numerical), but nevertheless it is a good predictor of arithmetic achievement (Table IV, row set 5). The explanation may be cognitive or affective, genetic or learned. If boys do not have more hereditary mathematical endowment than girls, it is at least true that they are more frequently reinforced for playing counting and grouping games (marbles, blocks, etc.) than socio-verbal games (house, dolls, etc.). Also the grade one teachers and curriculum are collectively effeminate and "sissyish", which may tend to decrease boys' motivation in the verbal area (with which the femininity is associated), and channel their abilities into arithmetic as the only acceptable cognitive outlet.

It should be mentioned that the possible effect upon achievement of all possible two-way interactions (10 in all) among the five predictor variables was investigated, and none of these was found to reach significance at the 5% level. This means, for example, in terms of Figure 1 that the tendency for the regression lines to be nonparallel was not significant, or equal increments in intelligence affect the achievement of children in all social classes and both sexes about equally.

VI. CONCLUSIONS

This study investigated the relationships to Edmonton grade one pupils' achievement, of five predictor variables—age, score on the Detroit Beginning First-Grade Intelligence Test, socio-economic status, pre-school instruction, and sex. All five variables are significant predictors of achievement, but some more directly and more permanently so than others.

Figure 2 summarizes the logical and statistical relationships among variables in this study. In Figure 2 a line from one variable to another indicates direct statistical relationships, in the presence of other variables, while an arrow indicates the direction of the assumed logical relationship. The percentages included in the figure indicate the reduction in predictive efficiency when a predictor variable is excluded in the presence of the others. (These do not generally add up to 100% because of intercorrelations.) For example, in predicting grade one verbal achieve-

ment, knowledge of socio-economic status adds about 3% to prediction efficiency for children of the same sex and same Detroit raw score.

There are no direct lines from age or pre-school instruction to achievement since knowledge of these variables does not significantly increase the efficiency of predicting the achievement of children of the same socio-economic status, sex, and Detroit score. For children of the same Detroit intelligence score, girls exceed boys on verbal achievement, while boys exceed girls on arithmetic achievement.

The large sizes of the percentages associated with question marks in Figure 2 deserve extensive comment. These are the percentages of the variance of the criteria that are not predicted on the basis of the variables in this study, about 70% for verbal achievement, and 55% for arithmetic achievement. Besides errors of measurement, it is easy to postulate a whole array of other cognitive and affective variables that are likely to affect achievement.

Only one cognitive predictor was used in this study—Detroit test score. There probably are differential aptitudes in various cognitive domains that affect achievement but this study was far too gross to indicate the nature of these. Then there are a host of motivational factors one might consider: need achievement, attitudes to school, anxiety, aggression, interests, creativity, dependency, etc. As well, the curriculum varies somewhat from one classroom to another, and some teachers are better than others.

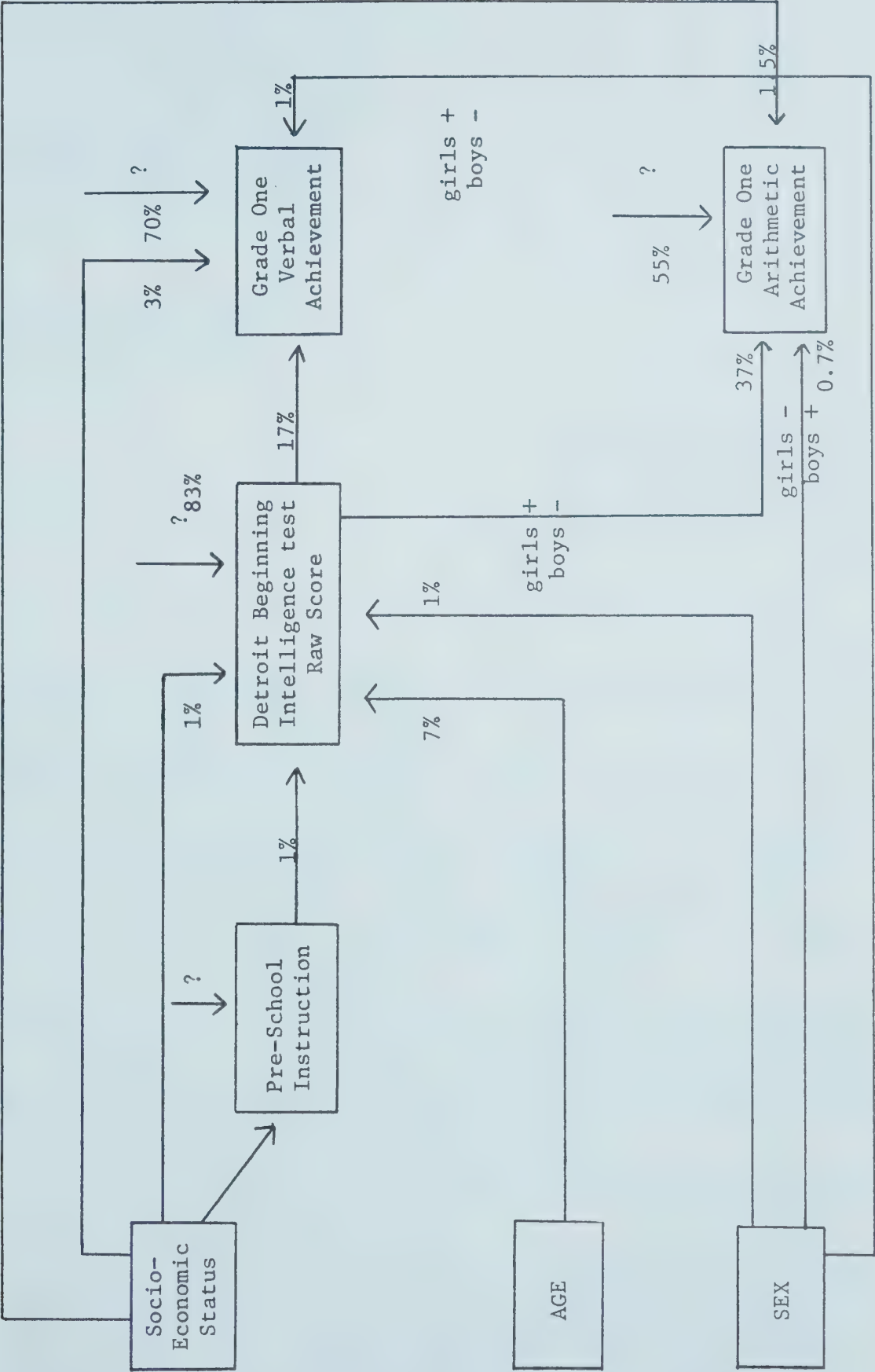
Nothing has been said so far about the validity of the Detroit test as an aid in the selection of children for school admission and ability grouping. These issues can be decided partly on the basis of psychometric properties of the tests, but are bound up with wider cultural values. One must consider the possibly high cost of errors of misclassification.

Also, little has been said about the comparison of the results of this study with other research. Little recent educational research has been devoted to the question of grade one achievement, but Romaniuk's review reports correlations between intelligence and grade one achievement of the same order of magnitude as those found here.

REFERENCES

- ¹ J. Briggles, et al., *A Study of the Detroit Beginning First-Grade Intelligence Test in the Edmonton Public School System*. Unpublished paper, Department of Educational Psychology, University of Alberta, Edmonton, 1964.
- ² J. Briggles, et al., *Ibid*.
- ³ R. A. Bottenberg and J. H. Ward, *Applied Multiple Linear Regression*. Washington: Department of Commerce, Office of Technical Services, Technical Report PRL-TDR-63-6, 1963.
- ⁴ A. R. Romaniuk, *An Evaluation of the Effectiveness of the First-Grade Readiness Tests as Used in the West Jasper Place Public Schools*. Unpublished M.Ed. Thesis, University of Alberta, 1964.
- ⁵ J. Briggles, et al., *Op. cit.*

Figure 2—LOGICAL AND STATISTICAL RELATIONS AMONG VARIABLES



In this short article the author presents the results of a study of aggressive tendencies among 'retarded' and 'average' students. Although the assumption that the measure used as a criterion can be questioned the study does provide some evidence contrary to a widely accepted view of the personality of the retarded.

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The Challenge— The Slow Learner

It appears to be generally understood that the mentally retarded have aggressive tendencies. Rothstein stated:

Behaviours and attitudes most frequently attributed to educable mentally handicapped children include overaggressiveness.¹

This concept may be better clarified when one recognizes the frustrations encountered by the slow learner and his mental immaturity in attempting to cope with his problems. Stevens and Heber mention that, "... retarded persons are subject to more rather than less frustration as a consequence of reduced ability to achieve desired goals".²

Several studies which reported aggressive tendencies of mentally retarded school children were conducted in the fifties. Two of interest were published by Sherman and Bell,³ and Angelino and Shedd.⁴ For the most part, however, institutional populations were of greater concern to those interested in studying aggressive behaviour.

The review of studies of institutionalized populations indicate that little has been done in this area.

In view of the common assumption that the mentally retarded tend to be subjected to more frustration than other persons, it is rather remarkable that so few studies of frustration and its effects have been conducted. Little evidence is available to support this assumption, nor is there much evidence to suggest that the retarded respond any differently (as one might expect if they, in fact are more continuously frustrated) or are any less tolerant of frustration than non-retarded persons.⁵

With these thoughts in mind, a study was recently undertaken to verify whether, in truth, differences would be noted in aggressive behaviours between “slow learners” and so-called “average” learners. An assumption was made that the act of challenging a teacher by a student whether it be in the classroom or privately, if it were related to school work, would for the purpose of this study be considered an indication of some form of aggressiveness. The dictionary meanings for challenge: “To call for, often as if possessing a natural right; to call into question, especially for verification, explanation or justification; to take exception to”, were inferred as aggressive behaviours.

For the slow learner group, the population of all the special classes in one school district were contacted. There were 103 boys and girls in this group. A comparable group of 101 pupils was chosen from what could be termed a “typical” or “average” school in the same area. All the subjects were teenagers enrolled in high school programs.

The subjects were asked to respond to questions relating to whether or not they had ever challenged a teacher, under what circumstances this act occurred, and whether or not the effort was “worth it”.

The findings demonstrated so close a relationship between the two groups and between the sexes of each group that statistical measurement was not contemplated. These findings are tabulated in Table I.

TABLE I
SUMMARY OF RESPONSES OF TWO SELECTED GROUPS OF
HIGH SCHOOL STUDENTS CONCERNING A CHALLENGE OF A TEACHER

	Slow Learners				Average Learners			
		Yes	No	T		Yes	No	T
Challenge A Teacher	Boy	33	17	50	Boy	31	14	45
	Girl	35	18	53	Girl	36	20	56
	Total	68	35	103	Total	67	34	101
Effort Worth It	Boy	20	13	33	Boy	19	12	31
	Girl	23	11	34	Girl	25	10	35
	Total	43	24	67	Total	44	22	66

Little difference was found between the slow learners and the average learners in openly challenging a teacher. In the slow learner group 68 did, at one time, offer a challenge, whereas 35 did not. Of those who challenged, 33 were boys and 35 were girls. Just 17 boys and 18 girls refrained from such acts.

In the “average” group 67 did challenge a teacher, whereas 34 did not. Of those who did, 31 were boys and 36 were girls. Only 14 boys and 20 girls refused to act.

Not all of the boys and girls of either group saw fit to react to the question, "if the effort was worth it". However, once again the responses were closely proportionate between and within each group.

Forty-three of the slow learners found satisfaction in issuing the challenge to the teacher compared to 44 in the "average" group. In the slow learner group 20 were boys and 23 were girls. In the other group 19 were boys and 25 were girls.

A smaller number was not satisfied with their efforts; 24 were in the slow learner group and 22 in the other group. Among the slow learners, 13 were boys and 11 were girls, the second group listed 12 boys and 10 girls.

The slow learners also indicated that, for the most part, the challenge was openly issued in the classroom. Only one out of six pupils saw the teacher privately to take issue with his remarks. A small number, approximately ten percent of the total group, thought that the teachers were unresponsive to their expressions.

The subject matter area that provoked the challenge was varied. The subject of English ranked highest. This was closely followed by Social Studies. Science and Mathematics both ranked third, and were recorded at approximately half the number of the first two subjects mentioned. Several of the pupils vaguely referred to "any", or "all" subject matter areas.

In summation, according to this study, slow learners are no different than other students when the opportunity presents itself to challenge the teacher. Approximately two-thirds of the pupils polled availed themselves of this privilege. Two-thirds of this number (those who issued the challenge) felt satisfied that the effort was worth the time spent.

REFERENCES

- ¹ Jerome Rothstein, *Mental Retardation* (New York: Holt, Rinehart and Winston, 1962) p. 217.
- ² H. Stevens and R. Heber, *Mental Retardation*, (Chicago: The University of Chicago Press, 1964) p. 148.
- ³ M. Sherman and E. Bell, "The Measurement of Frustration: An Experiment in Group Frustration," *Personality* 2:44-53.
- ⁴ H. Angelino and C. L. Shedd, "A Study of the Reactions to 'Frustration' of a Group of Mentally Retarded Children as Measured by the Rosenzwitz Picture Frustration Study," *Psychology Newsletter*, 8:49-54.
- ⁵ Stevens and Heber, *Op. Cit.* p. 149.

Teacher education institutions are constantly searching for techniques and materials to improve the efficiency of their graduates as classroom teachers. This article reports research into the use of tape recordings to improve teaching performance and increase self-evaluation by students in intern programmes. The results suggest that the effective use of tape recordings necessitates the development of a sound methodology for their use.

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Tape Recordings, Feedback and Prospective Teachers' Self Evaluation*

Background

Tape recordings and other feedback have long been an accepted part of the professional preparation of the helping professions: psychiatry,¹ psychology,² and social work. When tapes are used in training, the usual practice is to require the student (intern or resident) to record interviews, to listen critically alone or in the presence of supervisors, and to include the use of tapes in case conferences when patients (or clients) are being "staffed." Anderson and Bown's thoughtful description of one method of using tape recordings in the training of counsellors appears (apart from its phenomenological orientation) to be, in many respects, quite representative of the training of professional helpers in general.³

*This study was made under the auspices of the Mental Health in Teacher Education Demonstration-Research Project, Dr. Robert F. Peck, Director. Research was supported by the National Institute of Mental Health (Grant 2M-6635) and the University of Texas. The authors wish to express appreciation to Dr. Alma Freeland of The University of Texas and Mr. N. K. Hage of Highland Park School, Austin, Texas, for their assistance in this investigation.

Although there is a rather extensive literature on the use of tape recordings in three professional disciplines, this sizeable body of writings is descriptive, rather than empirical. Tape recordings are assumed to be valuable tools in training and are believed (on theoretical or just plain common-sense grounds) to contribute to modification of the trainee's professional behaviour, whatever the discipline. It seems fair to state that the literature is marked by a surfeit of such theoretical asserverations but with a paucity of objective, quantitative data.* Cronback (1960) comments that many psychological techniques are used on the basis of "faith validity" alone. When one notes the all-too-apparent absence of supporting data, tape recordings seem to be one such technique.

Tape Recordings in Teacher Preparation

A number of articles describe the use of tape recordings in the training of teachers.⁴ More recently, a Ford Foundation publication,⁵ reported a procedure in use at a large university in which one method of helping interns overcome their teaching problems is to tape record their performances in the classroom. The intern plays the tapes to herself, isolates the points at which things went wrong, and discusses them with the master teacher. Once back on campus, the tapes are played at a seminar, and other interns and the faculty members discuss the problems they reveal.

It will be noted that this practice is reminiscent of that used in counsellor training. Again, although the use of tape recording in teacher training was developed later than in therapist training, and although colleges of education may have modeled their special use of tape recorders after the prevailing practices in the menth health professions, lamentably there exists also in this literature a similar dearth of objective evidence either confirming or disconfirming expectations for this method in teacher training situation.‡

Purpose of This Study

The primary purpose of our investigation was to provide an objective test of the long-prevalent belief that the tape recorder technique "helps"

*The few studies which do set forth objective data (cf. Lamb & Mahl, 1956) focus on aspects of tape recording use, other than its effectiveness in modifying professional helping behaviour, e.g., effect on clients, therapists, conduct of the interview, etc.

‡The work of Claus [*Learning as a function of reinforcement during playback of recorded verbal behaviour*. Unpublished doctoral dissertation, Northwestern University, Evanston, Illionis, 1963.] may properly be subsumed under "basic" research, i.e., investigation of the variables involved in a laboratory learning situation using verb triads. His is "micro research": our study is applied "macro" type research. McNeil (1962) tested hypotheses derived from communication theory but utilized visual feedback rather than tape recordings.

trainees in some way to modify their professional behaviour. More formally and explicitly stated, our primary hypothesis was that the prospective teacher or counsellor will become more "realistic" about his own performance after listening to a tape recording of his teaching session. If we define "realism" in terms of absolute discrepancies between self-ratings and ratings of observers, the hypothesis which seems to be implicit in the use of tape recordings for training is that such discrepancies will decrease after feedback. Since this feedback usually includes comments from supervisors as well as listening to tapes, there are actually two kinds of treatment involved: listening to tapes alone, and tapes plus feedback from other persons.

Thus, the first specific question that the present study was designed to answer was whether absolute discrepancies between "self-ratings" and "other-ratings" decrease when the usual practice is followed, i.e., when interns listen to their tapes and also receive feedback from other persons. However, if the person is a supervisor, a decrease in discrepancy between self-ratings and supervisor ratings of a single performance might merely reflect the degree to which the intern is willing to "copy" the supervisor's ratings, rather than any increase in his ability to rate himself in a new situation. In order to take this possibility into account, the present study was so constructed that one group of teaching interns taught and was tape recorded twice: the first time they listened to their first tape and received feedback from the supervisor and others; the second time they listened to the second tape, but received no supervisor or observer feedback. These interns rated themselves three times: (1) after the first teaching experience, (2) after receiving both tape and instructor-observer feedback on first teaching and teaching a second time without listening to the second tape, and (3) after listening to the second teaching tape.

An additional purpose of the investigation was to ascertain whether absolute discrepancies between self-ratings and other-ratings decrease after listening to tapes alone, i.e., without other feedback. Therefore, a second group of interns taught only once, and rated themselves before teaching, after teaching, and after listening alone to their tapes. In order to be able to describe more adequately what was being evaluated, ratings of all observers were factor analyzed.

The Rating Scale

The rating instrument used was the Bown-McGuire Teacher Rating Scale, consisting of forty-eight items derived from several hundred interviews with student teachers, student teaching supervisors, and master teachers not included in the present study. Reliabilities for the individual scales of this instrument ranged from .70 to .93 (split half) and from .52 to .75 (inter-rater agreement). In one study, the test-retest

method was utilized after an interval of three weeks, yielding a correlation of .92. A factor analysis of the 48 scales based on 1,027 protocols yielded 9 orthogonal factors which were tentatively labeled Perceptiveness (2 items), Flexibility, Enthusiasm, Systematic Procedure, (each 4 items), Subject Matter Adequacy, Formality of Style (each 5 items), Self-confidence, Communication, (each 6 items), and General Ability (12 items).

Feedback Procedure

Feedback was defined in terms of Anderson and Bown's three stages of case supervision, especially adapted for teaching interns. These are: (1) presentation from the viewpoint of the intern, (2) evaluation by a supervisor, and (3) understanding the meaning and intent of the intern's behaviour. First, each intern listened to her own tape and presented her view of her laboratory teaching in a 300 to 500-word written unstructured "personal reaction" to her own teaching. Second, the instructor responded with a written evaluation of the intern's teaching based on notes taken during her laboratory teaching and on the intern's reaction paper. Third, instructor and intern discussed both evaluations, and teaching performances were discussed generally in the university classroom. In addition, interns rated one another and each intern was given all ratings of her which had been completed by other interns.

The "tape-only" condition was defined as the simple provision of a facility in which an intern listened to her own short (five to ten-minute) tape recording without supervision for a maximum of 30 minutes.

Laboratory Teaching and Rating Procedure

Group F, the feedback group, consisted of twenty-two female elementary education majors who were observers in a public elementary school two mornings a week. During their second week of observation in the elementary classroom, each of these interns taught the other twenty one members of the group in the university classroom and tape recorded approximately five minutes of her own teaching. Using the Teacher Rating Scale described above, this group rated one another, each intern being rated immediately after her teaching performance. Each intern also rated herself immediately after teaching. She then listened to her tape, received the feedback described above and taught a second time in the same laboratory situation. After this second teaching, each intern rated herself a third time without instructor or peer feedback. Interns in this group were also rated by their joint supervisor in the public school, by their master teachers, and by their university classroom instructor (Observer A).

Group T, the tape-only group, consisted of eighteen female elementary education majors who were also observing in the public school.

Group T taught once in the same laboratory situation as Group F, but received no feedback other than their tapes. They rated themselves before teaching, after teaching, and after listening to their tapes. Interns in this group were also rate by their university classroom instructor (Observer A) and by a teaching assistant (Observer B).

Results

Feedback Group

As can be seen from Table I the feedback group's self-ratings increased significantly from first to last self-rating, i.e., they rated themselves higher after their second teaching than after their first teaching. At the same time, there was a significant decrease in absolute discrepancies between self-rating and ratings by the laboratory observer, ratings of public school supervisor, ratings of master teachers, and ratings of peers.

TABLE I
MEANS OF SELF-RATINGS AND OF DISCREPANCIES BETWEEN SELF AND OBSERVER RATINGS OF FEEDBACK GROUP (N=22)

	After First Teaching		After Second Teaching	After Second Tape	P
Self-Rating	200.04		214.96	217.77	.001
Discrepancies					
Self vs. Laboratory Observer ...	37.77	F			
Self vs. School Observer	31.48	E	28.68	28.27	.05
Self vs. Master Teachers	44.91	E			
Self vs. Peers	26.12	D	24.39	22.93	.05
		B			
		A	34.00	31.50	.05
		C			
		K	16.55	13.97	.01

It should be remembered that only the laboratory observer and the peer group rated interns both on first and second teaching, while school supervisor and master teachers rated interns only once on their over-all performance at the school. Consequently, it was not possible to discover whether increases in self-ratings reflected improvement as judged by school supervisor and master teachers, but a comparison between ratings of first and second teaching by peers and laboratory observer indicated a significant increase in the ratings of both the laboratory observer and the mean of the peer group ratings from first to second teaching.

Tape-Only Group

As is evident from Table II, the self-ratings of the tape-only group followed the same direction as the self-ratings of the feedback group, but

the increase from first to last self-rating did not reach the required level of significance. Differences in absolute discrepancy scores were not significantly different from first to final self-rating.

TABLE II
MEANS OF SELF-RATINGS AND OF DISCREPANCIES BETWEEN SELF AND
OBSERVER RATINGS OF TAPE-ONLY GROUP (N=18)

	Before First Teaching		After First Teaching	After First Tape	P
Self-Rating	210.00	N	214.39	219.55	ns
Discrepancies		O			
Self vs. Laboratory Observer A	35.47	F	37.58	39.91	ns
Self vs. Laboratory Observer B	34.25	E	40.42	41.86	ns
Self vs. Peers	24.06	E	28.11	23.22	ns
		D			
		B			
		A			
		C			
		K			

Discussion

The data do not support the hypothesis that listening to tape alone, without additional feedback will reduce absolute discrepancies between self-ratings and ratings of observers.

When tape recordings were supplemented by instructor and peer feedback, absolute discrepancies between self-ratings and ratings of others decreased significantly. Whether this decrease is due to actual improvement in teaching performance as a result of the circumstances of the study or public school classroom experience is not entirely clear. In any case, since the discrepancy change in the "tape-only" group was not significant, and since in the "feedback" group the largest discrepancy occurred between first and second teaching, i.e., after feedback rather than after tape-listening alone, we can safely conclude that listening alone to tapes of initial teaching is more likely to be a *vehicle* for supervisory feedback than a means in itself of improving accuracy of self-perception.

Further study of the effect of feedback on self-perceptions of future teachers seems warranted. One possible technique for such an investigation is the newly marketed 8 mm. colour film pre-stripped for sound. Patients and therapists have been able to adapt themselves to such techniques.⁶ In addition, such films are susceptible to re-examination, and use of them can increase the number and kinds of judgments which can be made about performance. Consequently, investigations are now underway using tape recordings and an 8mm. sound film, as well as long-term observations of teaching performance.

Summary

Although tape recordings have long been an accepted part of professional preparation in counselling and psychotherapy, and have more recently been introduced into teacher preparation, no empirical investigations have been reported concerning the influence of listening to such tapes and of accompanying feedback from supervisors and other observers upon changes in trainees' self-evaluations. The purposes of the present investigation were to discover (1) whether discrepancies between intern's self-ratings and ratings of observers change when interns listen to their tapes and receive feedback from observers, (2) whether such changes also occur after listening to tapes alone without other feedback. In agreement with reports in the clinical literature, feedback rather than tape listening alone was the crucial variable. Results support the hypotheses that use of tape recordings in combination with person-to-person feedback modifies teacher trainee behaviour in the direction of greater concordance with the perceptions of others. Further research on the impact of feedback on self-perception is underway using a technique involving a newly marketed 8 mm. color film pre-stripped for sound.

REFERENCES

- ¹ R. Lamb, and G. F. Mahl, "Manifest reactions of patients and interviews to the use of sound recording in the psychiatric interview." *American Journal of Psychiatry*, 1956, 112, 731-737.
- ² R. P. Anderson, and O. H. Brown, Tape recordings and counsellor-trainee understanding. *Journal of Counselling Psychology*, 1955, 3, 189-194.
- ³ *Ibid.*
- ⁴ L. J. Cronbach, *Essentials of Psychological Testing*, Second Edition, New York: Harper and Row, 1960
- ⁵ See, for example, F. C. Hill, and J. M. Miller, Tape recorder as an aid in teacher preparation. *Educational Administration and Supervision*, 1953, 39, 365-369.
- ⁶ Ford Foundation: *The New Teacher*. New York: Ford Foundation Office of Reports, 1962.
- ⁷ R. S. Sternberg, Jean Chapman, and D. Shakow, "Psychotherapy research and the problem of intrusion on privacy." *Psychiatry*, 1958, 21, 195-203.

BOOK REVIEWS

THE SEVENTH SOLITUDE

by Ralph Harper, *The Cop Clark Publishing Co. Ltd.*, \$4.50.

It is always refreshing to discover a book which covers in 150 pages or so what could well be dealt with in 400 or 500 pages. Ralph Harper's latest book, *The Seventh Solitude*, does just that. Mr. Harper has undertaken the considerable task of examining man's "isolation," as it is exemplified in the lives and writings of Kierkegaard, Dostoevsky and Nietzsche.

His major thesis is that, while there have always been men and women born to the 'outsiders,' or deliberately choosing loneliness, in the nineteenth century, a different type of 'isolation,' "the new self-conscious solitude of those who record the absence or silence of God," developed in some men. "To be homeless and in exile is as old and as sad as the hills; to be metaphysically homeless and to care is new."

Kierkegaard, Dostoevsky and Nietzsche were, perhaps, the first, and certainly the most eloquent and insightful, recorders of this new kind of loneliness, and Mr. Harper devotes the major part of his book to an analysis of the various forms this sense of isolation took in their lives and writings. He insists that 'the death of God,' which Kierkegaard, Dostoevsky and Nietzsche noted and interpreted, each in his own way, has led to the destruction of all absolute values; in fact, to an "excursion into chaos."

However, Mr. Harper is too good a Christian to be content with a mere analysis and exploration of the consequences of this radical nihilism. He feels obligated to suggest an alternative by which man might recover his "nostalgia for unity and justice." Thus, in an Appendix, which takes up almost a third of the book, he makes an interesting but, to anyone who does not share his Christian assumptions about the nature of God and man, totally irrelevant comparison of Proust's and Augustine's views of the 'condition of man,' and concludes with the plea of Augustine that we "arise and return to Him from whom by our sin we had departed."

Fortunately, the depth and interest of the analysis which comprises the first two thirds of the book outweigh the naivety of Mr. Harper's conclusions. Written in a style that is so terse and condensed that it often borders on the epigrammatic, his interpretations are both sound and insightful. Perhaps his desire to display his erudition has led him to spice his analysis with too many references to other thinkers, including such diverse figures as Kafka, Stendhal, Hiedegger, Pascal and Socrates; but this is forgivable. More culpable is his unfortunate tendency to

concern himself more with the relationship between the psychological make-up of the thinker and his thought than with the ideas themselves, with the "Why" rather than the "What."

Nietzsche himself once wrote, "It is always well to divorce an artist from his work, and to take *him* less seriously than *it*. He is, after all, only a condition of the work, the soil from which it grows, perhaps only the manure on that soil." One cannot avoid the impression that perhaps Mr. Harper has expended too much energy on sifting through the 'manure,' and somewhat ignored the plant.

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EDUCATIONAL PSYCHOLOGY

By S. R. Laycock and B. C. Munro, (Vancouver: Copp Clark Publishing Co. 1966).

Educational Psychology is presented as a replacement for *Teaching and Learning*, published by the senior author in 1954. It is not, however, a revision of the 1954 publication. The book incorporates considerable Canadian content and provides a non-technical account of many of the recent developments within the field of educational psychology. The authors attempt to summarize research findings in terms of "rules-of-thumb" for teachers to follow. First year students in teacher education programs and in-service-teachers should have little difficulty understanding the material covered. Furthermore, *Educational Psychology* should prove useful for high school classes composed of students interested in education and teaching as a profession.

This book is divided into three major segments and an appendix. The format of the seventeen chapters is subdivided according to pertinent topic headings; it includes a chapter summary, a set of discussion questions and a list of related readings. The appendix includes three sections; basic statistical concepts, a guide for evaluating teacher-made tests, and, a guide for evaluating standardized tests.

More specifically, chapters one through six describe developmental characteristics of the learner. The authors view growth and development as the product of the interaction of constitutional and genetic factors, environmental and cultural forces, and the child's own self-concept. The importance of an adequate knowledge of individual differences for effective teaching is stressed.

The core of the book, chapters seven to thirteen deals with recent findings on the learning process and the teacher's role in implementing these in the classroom. Topics covered in this section include theories of learning, retention and transfer, concept formation and problem solv-

ing, learning of attitudes and creativity. The weakest chapter is the one on theories of learning; it lacks depth and fails to create an appreciation for the complexity of the learning process. The other chapters, as a whole, are well written and documented. The chapter on fostering creativity in the classroom is the high-point of this section. It is worthwhile reading for those interested in a general up-to-date overview of the area of creativity. Finally, techniques for dealing with ability differences in individual learners are covered in terms of recent advances in the technology of instruction. Among some of the topics included here are programmed instruction, language laboratories and instructional television. The section concludes with an overly simplified chapter on measurement and evaluation.

The third and final section of the book is devoted to topics related to mental health. The author emphasize the importance of a "healthy" self-concept for emotional maturity—their chapter "Learning to Cope Effectively with Stress" is particularly interesting with respect to this point of view. Also covered is the topic of special education, both for handicapped and gifted children. The authors point out special needs of these children and suggest means whereby teachers may more effectively deal with their respective learning problems. The last chapter focuses on the personal attributes, characteristics, and mental health of the teacher as these affect both the academic learning and personality development of pupils.

In summary, the book meets the objective of the authors—it provides a non-technical account of the field of educational psychology. It is felt, however, that the authors fail to develop within the student an appreciation for the complexity of the educational process. The book tends to leave one feeling a little too comfortable about the ease of becoming a "good" teacher.

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CONTRARY IMAGINATIONS

Liam Hudson, New York: Schocken Books, 1966.

After some preliminary discussion about the business and methods of science which would shame an undergraduate (Chapter I), Hudson reports that different sections of an IQ test discriminated between those specializing in degree patterns in Arts and those in Science. The former group performed relatively well on the verbal section of the test, but not on the numerical and diagrammatic ones; the latter group did relatively well on the numerical and diagrammatic sections, while the biological scientists were relatively strong only on the diagrammatic

sections. Students taking chemistry, biochemistry and metallurgy turned out to be relatively poor on all three sections of the test.

Hudson (Chapter 3), in attempting to replicate the work of Getzels and Jackson with English sixth-form students (15-17 years of age), found that the divergent-convergent dichotomy correlated significantly with specialization in English and History as against specialization in the physical sciences. The former group also showed more "unusual attitudes", emotional involvement in their opinions, themes of violence in their drawings, etc. Hudson concludes that young English physical scientists are much less "intellectually flexible" than young arts specialists and much more "emotionally restricted", a serious matter for the science educator. Hudson discounts the American thesis that divergers' attitudes are unusual because they are far-fetched or bizarre. The English divergers' attitudes are unusual because they avoid idealized stereotypes and bring together areas of experience which most boys keep apart, while convergers accept the stereotypes and compartmentalize their experiences. This theme is worthy of more attention than the passing glance it receives from Hudson.

Hudson (Chapters 5 though 8) proceeds to some speculations about the origin of divergent and convergent behaviour. The former is taken (p. 84) to be a defence against dissonance feelings, particularly of the "doublebind" sort in which the parents exert simultaneous and conflicting pressures on the child. By contrast, the parents of the convergent child emphasize and reward, not strong feelings, but the child's performance of some safe, impersonal skill which becomes a source of security and a haven from their embarrassing criticisms (clearly parents are a cold and hostile lot). Relying on Kuhn's *The Structure of Science*, Hudson goes on to claim that genuine creative performance will come from those high both in convergent and divergent skills (p. 136) an important correlate of this hybrid character being risk-seeking. Hudson (pp. 148-150) accounts for this last (and undefined) capacity by plunging to the spectacular inference that it is a product of an incestuous longing to be engulfed by the mother and a simultaneous fear of losing autonomy.

The present reviewer regards this as a long essay written by an enthusiastic but untrained undergraduate who still has to learn the tools of his trade.

Hudson persists in using evaluative, arch and imprecise everyday language instead of the technical variety. Examples include "clever brains" (university students), "sermons" or "morals" (implications), "polemic purpose" (statement of hypothesis) and "solid psychological orthodoxy" (established hypotheses). He shows an extensive ignorance of the science game. The following examples require neither comment nor rebuttal: (a) we must describe a person's "uniqueness" rather than traffic in overall theories (cf. Platt, *Science*, 1964, p. 349), (b) we must not provide "general ideas" if these are variously mistaken, (c) laboratory studies of learning, memory and perception are so "artificial" that "few psychologists" consult them, and (d) "Where an experiment is

designed to test a specific prediction from a given theory, the chances of its having any readily intelligible value to later generations of psychologists is slight" (p. 7).

Hudson exhibits a technical ignorance alarming in someone whose work is exclusively psychometric. (a) None of his studies is multivariate and his conclusions are often based on a consideration of isolated correlations. (b) This is unfortunate since he claims (p. 151) that "personality" (undefined) variables contribute more to the variance of performance on "intellectual discovery" than intellectual variables, a claim the truth value of which rests on the diminished variance of performances by university students. (c) Psychometrists are said (p. 4) to be cultural ignoramuses—this should amuse those who know Burt's paper in the *British Journal of Statistical Psychology*, 1958, 11, pp 32-70)—concerned with "establishing statistical connections between one variable and another" instead of with "the frightening margin of error that small and medium-sized correlations entail," and they neglect "the human situations from which their data derive" (p. 7)—one wonders if Hudson has ever read the work of Vernon, Bloom and McArthur. (d) Nests of technical solecisms can often be found. For example, Hudson contends that sampling considerations should not bother too much the psychometrist who, "interested in human nature, achieves little or nothing if he thinks of his sample solely in terms of dots and distributions curves. He must also be able to think of each member of his sample as an individual" (p. 21).

Hudson's psychology—if it can be dignified by such a label—is skiddingly synthetic and should, therefore, be accorded more of a "willing suspension of disbelief". Two criticisms must be entered against it, however, (a) Hudson has never heard of Occam's Razor, For example, risk-seeking (adequately defined) can be explained in terms of current experimental Psychology (see Fowler's *Curiosity and Exploratory Behaviour*) without recourse to formulations involving incestuous impulses towards the mother. Again, the relatively poor performance by science specialists on the verbal part of the I.Q. test is not attributed to their frequent distrust of words as a symbolic medium (see Koestler's *The Act of Creation*, p. 171) but to some "emotionality" (undefined) variable.

Findings are moulded to fit previous hypotheses without any consideration being given to the logical implications of the fit. For example, convergent and divergent behaviour are treated as defensive procedures against feelings associated with stress. The diverger, however, does express his emotions very openly. This must represent, accordingly, only a "persona" or mask covering his "true feelings" (p. 92) which go undefined. Freud turned this sort of trick, but at least he had the sense to realize that "all autobiographies are lies", whereas Hudson (p. 76) relies heavily on these documents.

Hudson's (pp. 150-151) apology for his theory might well be extended to the entire piece. He is listed as director of the Research Unit on

Intellectual Development of King's College, Cambridge. Doubtless he is looking for research funds. When these are available, he would be well advised to give priority to his own return to graduate training in the science game.

C. C. ANDERSON

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EDUCATIONAL MEASUREMENT FOR THE CLASSROOM TEACHER

by F. M. Smith & S. Adams, 1966, New York: Harper.

This book has the potential for going a long way towards satisfying the need for a relatively non-technical publication in a technical field with which the classroom teacher has to struggle everyday. The authors' claim that the book is "designed primarily for prospective and in-service teachers" is valid for a number of teachers who did not or would not acquire an adequate background in measurement as a part of their professional education. By the same token, however, and also because of a number of glaring deficiencies, the book would be ruled out from consideration as a text for a formal course.

The "Historical Perspective" of six pages is neither relevant nor accurate—it merely perpetuates the slips of earlier writers. On the quantitative aspects of the field, the descriptions are dilatory (3 pages to tell the teacher why statistics is necessary), unrealistic and sketchy, and occasionally not very accurate. The formula for calculating coefficients of correlation from ungrouped data is not given but that for grouped data, which is rarely used with success because of its use is arduous and messy, is given. If computational simplicity was the motive, rank order correlation would have been a suitable substitute. But the latter is not even mentioned.

A good introduction to reliability is provided and also a description of the common types but the authors forget to mention that the three common types are merely correlations. The Spearman-Brown formula is mentioned but not given. Split-half reliability is said to be "widely used by publishers of standardized tests" (p. 60) which is of doubtful truth. The joint APA and AERA committee is said to have recommended *five* validities but this is clearly not the case. A number of such experiences are in store for the curious but careful reader in chapters 3 and 7.

The book disposes of validity, reliability and the writing of objective test items in too few pages. One wonders how well the book will serve the classroom teacher. Research findings are rarely cited to support recommendations. On page 122, for example, it is recommended that true and false items should be equal in number. This is contrary to

Cronbach's findings on "acquiescence set". One would like to know whether Cronbach has been disproved.

There are certain welcome features too. The book is written in communicative style, with homely examples. It gives chapters to the measurement of affective outcomes and also to essay examinations which are often ignored or scantily treated by other authors. On the whole, it covers familiar ground in a readable but, alas, not a highly reliable fashion. It is hoped that revisions will take care of the deficiencies and make the book a valuable contribution to the teacher.

RAM K. GUPTA

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TECHNIQUES OF GUIDANCE

by Arthur E. Traxler and Robert D. North, New York: Harper and Row, 3rd Edition, 1966.

The third edition of *Techniques of Guidance* provides a comprehensive treatment of guidance as it now exists in many schools. The authors have noted that in most schools guidance is going on without much pre-occupation with theory. While the critical theoretical questions are being debated there is still a need for a thorough treatment of everyday guidance practices. This book attempts to answer this need by providing the framework for an effective guidance program.

The latest edition does not represent a radical change in philosophy, format, or content from the earlier editions (1945, 1957). However, there is evidence of considerable re-writing and the authors have incorporated much recent research in their revision. Nevertheless, readers who found the previous editions unacceptable will find little reason to change their opinion of the 1966 edition.

The authors' approach to guidance is basically eclectic, and scientific rather than intuitive. The emphasis of the entire book is on the efficient management of objective information cumulatively collected and treated. They stress practice rather than theory. They concentrate on the information service rather than on the affective aspects of guidance.

Although the authors seem to be asking all the right questions they have failed to provide satisfactory answers to most. Nonetheless, directors of fledgling guidance services will find Chapter II a valuable guideline for practice. An affirmative answer to the thirteen questions presented therein would suggest a healthy approach to guidance.

Chapter I presents a cursory examination of the origins and meaning of guidance; the authors contend that the systematic collection of information (the cumulative record), is basic to the successful functioning of all aspects of guidance. Graduates of client-centred schools of coun-

selling are not likely to share this enthusiasm for testing and objective evaluation of students.

Chapters IV to XV outline the information aspect of guidance. These chapters provide a short course in psychometrics, statistics, cumulative records, and case study procedures. Both teachers and counsellors will profit from a reading of Chapter XVI in which the authors discuss the role of the teacher in guidance. Chapter XX presents a brief survey of the application of group procedures to guidance. Chapter XXI attempts a survey of some relevant research literature. Although many recent publications are included, the bulk of the references are derived from the 1950's or earlier. The final chapter constitutes a forecast of future developments in the field of guidance.

Chapter XIX represents a good attempt to reconcile the two major theoretical approaches to counselling. Although brief and over-simplified, the authors present an integrated picture of counselling as a learning process. They point out that the ultimate purposes of counsellors and teachers are not only similar, but that they are virtually identical. Judging by the apparent friction between teachers and counsellors in Alberta, this statement bears repeating. The size and complexity of the modern school requires that the educator, as Traxler and North state, "must learn to function to a large degree as a counsellor rather than as an educator alone."

Since the authors have limited their material to the practice of guidance as it now exists, it is perhaps unfair to criticize them for indifference to the implications of current theoretical issues. They have attempted to provide a practical program for the existing system. While giving some attention to trends and innovations, they have remained steadfast in their adherence to the "science" of guidance: the objective treatment of cumulatively collected information. They recognize the dangers of a testing service. They are quick to point out that information, no matter how efficiently collected and organized, is only a means to an end. The individual student remains the focal point of the guidance service. The authors are realists: they have attempted to remove the imperfections of existing practice, and not to provide the framework for a new practice.

However, their attitude is appropriate only if we are willing to accept their assumption that change will not readily occur. There is evidence that counsellors are better trained and more able to cope with all aspects of guidance than Traxler and North admit. One cannot justify their approach merely because at present most of the school guidance programs support or reflect their viewpoint. The fact that we cannot expect present counsellors to fulfill adequately the role current theory suggests does not mean we should retreat from the battleground. Instead, the field of guidance needs articulate missionaries to implement the necessary reforms.

Thus, the tendency to dwell on current practice and to ignore future developments represents a major fault of the book. Even in the infor-

mation aspects this shortsightedness is apparent. For example, although mention is frequently made of innovations in data processing, no detailed application is made in the sections on the cumulative record, home reports, and everyday administration of the guidance service. Merely to briefly mention the possibility of application of computer-based systems to counselling fails to provide any satisfactory answers for guidance workers inundated with clerical work, burdened with storage room full of unused test data, and inefficient record systems. Although obviously aware of current trends the authors seem basically oriented to existing practice.

Techniques of Guidance is easy to read. For the most part the authors have avoided technical jargon and made the book quite intelligible to all readers. They include numerous examples of appropriate forms, questionnaires, cumulative record plans, report cards, and test materials. There is something of value in the book for administrators and teachers as well as guidance workers. In fact, the book is better suited for the neophyte than for the sophisticated reader. However, the size of the book (8" × 11") may make it an unwelcome addition to many bookshelves.

This writer cannot share their approach to the counselling situation, in which the information service is overly stressed. Reading this book could lead one to believe that the authors are unaware of the important changes in the concept of the nature of counselling that have occurred since their first edition was published. However, it must be admitted that they exhibit considerable familiarity with the actual conditions in which teachers and counsellors work. Thus, for those who share their viewpoint, for teachers and guidance workers now in the schools, for the neophyte counsellor, this book provides an adequate coverage of the everyday practical problems of a guidance service. In conjunction with texts which are more theoretically oriented, *Techniques of Guidance* would serve well in an *introductory* course in guidance.

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BOOKS RECEIVED

Farquhar, R. N., *Agricultural Education in Australia*, Victoria: Australian Council for Educational Research, 1966.

Howard, Charles F. and Enoch Dumas, *Teaching Contemporary Mathematics in the Elementary School*, (Third Edition), New York: Harper & Row, 1966.

Kaplan, Louis, *Foundations of Human Behavior*, New York: Harper & Row, 1965.

McQueen, H. C. and W. B. Harris, K. W. R. Glasgow, G. H. Boynes, K. H. O'Halloran and N. S. Woods, *The Background of Guidance*, New Zealand: Whitcombe & Tombs Ltd.

Nisbet, John D. and Noel J. Entwistle, *Age of Transfer to Secondary Education*, London: University of London Press Ltd., 1966.

Tiedt, Sidney W., *The Role of the Federal Government in Education*, New York: Oxford University Press, 1966.

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THOMAS W. WHITELEY is presently an Associate Professor of Education at the University of Saskatchewan. His predominant teaching responsibilities are in curriculum studies. He was formerly Head of the Educational Psychology Department in a small University in the State of Oregon. He published articles on diverse subjects such as the "Effects of Accredited Teacher Education Programs on Teacher Persistence," "Concerns of Teen-age School Students," "My Friend—the Drop Out."

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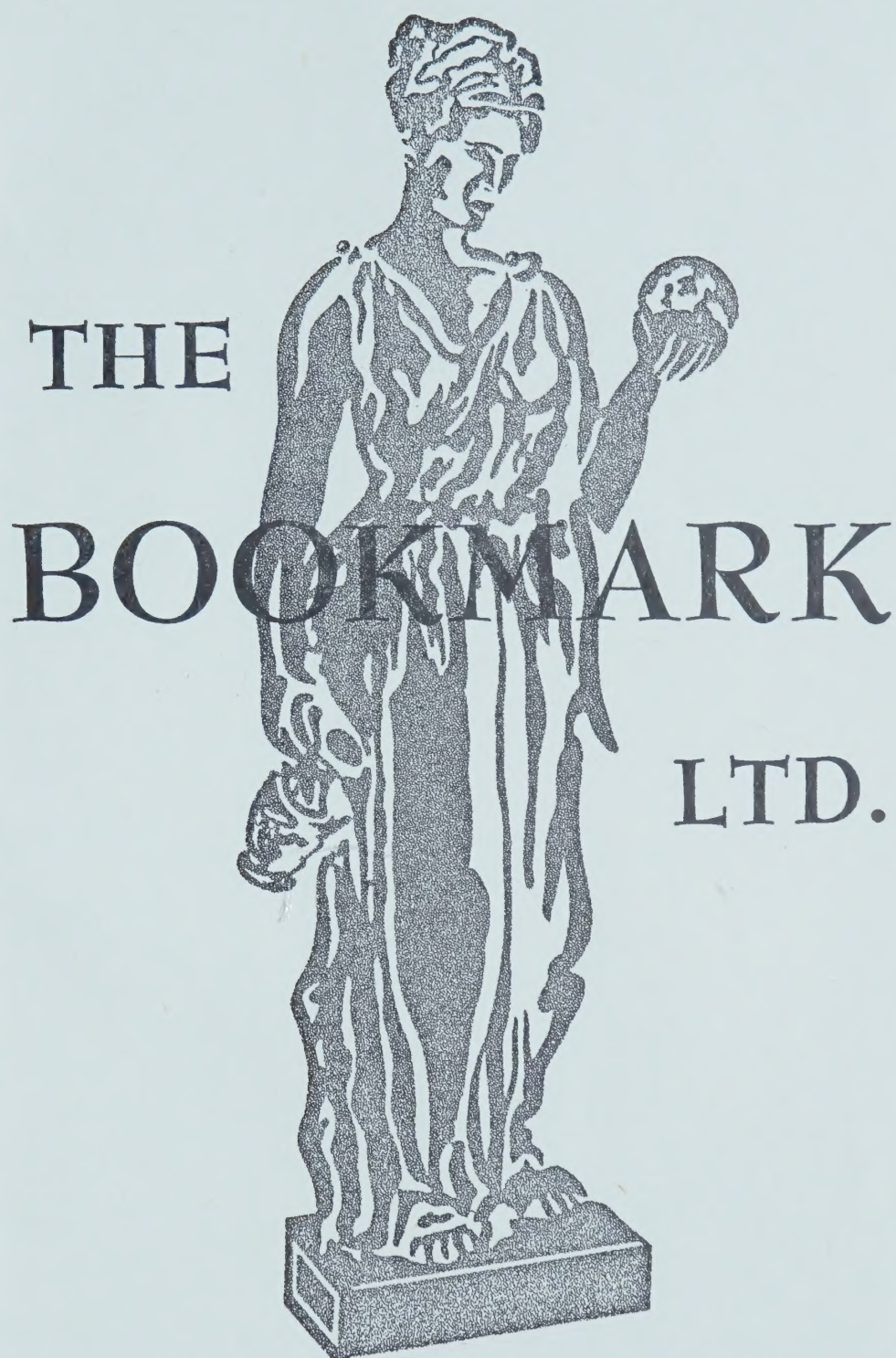
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- Anderson, Charles C., *Psychological Contributions to Education: A Decision Concerning Second-Language Learning in the Elementary School*, No. 1, March, 1966.
- Belth, Marc, *The Study of Education as the Study of Models*, No. 3, September, 1966, pp. 203-223.
- Black, D. B., *Methods of Predicting Freshman Success: Summary and Evaluation*, No. 2, June, 1966, pp. 111-126.
- Black, D. B., and D. W. Knowles, *Effects of Normalization on Prediction of University Success*, No. 1, March, 1966, pp. 27-36.
- Bown, O. H., F. F. Fuller, and H. G. Richek, *Differentiating Prospective Elementary and Secondary School Teachers*, No. 2, June, 1966, pp. 127-130.
- Brauner, Charles J., *Models, Models Everywhere*, No. 3, September, 1966, pp. 239-246.
- Brown, C. K., and F. Enns, *The Development of Teacher Tenure Legislation in Alberta*, No. 1, March, 1966, pp. 41-53.
- Chabassol, David, J., *Research, Publication and Teaching*, No. 1, March, 1966, pp. 55-62.
- Desson, George H., and Arthur G. Storey, *Achievement as a Function of Assigned Grades*, No. 4, December, 1966, pp. 269-274.
- Eastwood, Gordon R., *Uses of Models: Another Dimension*, No. 3, September, 1966, pp. 225-233.
- Eccles, P. J., *Knowledge of Science and Teaching Behaviour*, No. 2, June, 1966, pp. 141-156.
- Enns, F., and C. K. Brown, *The Development of Teacher Tenure Legislation in Alberta*, No. 1, March, pp. 41-53.
- Fisher, A. D., *Education and Social Progress*, No. 4, December, 1966, pp. 257-268.
- Flatham, D. P., *Prediction of Grade One Achievement*, No. 4, December, 1966, pp. 285-295.
- Fuller, F. F. and O. H. Bown and H. G. Richek, *Differentiating Prospective Elementary and Secondary School Teachers*, No. 2, June, 1966, pp. 127-130.
- Fuller, F. F., Herbert G. Richek, and Donald J. Veldman, *Tape Recordings, Feedback and Prospective Teachers' Self Evaluation*, No. 4, December, 1966, pp. 301-307.
- Holdaway, E. A., and D. A. MacIver, *An Analysis of the Use of Models in Education*, No. 3, September, 1966, pp. 163-188.
- Knill, W. D. and A. Kowalski, *Teachers and Educational Decision Making*, No. 2, June, 1966, pp. 105-109.
- Knowles, D. W. and D. B. Black, *Effects of Normalization on Prediction of University Success*, No. 1, March, 1966, pp. 27-36.
- Kowalski, A. and W. D. Knill, *Teachers and Educational Decision Making*, No. 2, June, 1966, pp. 105-109.
- Maccia, E. S. and G. S. Maccia, *Educational Theorizing Through Models*, No. 3, September, 1966, pp. 189-197.
- Maccia, G. S. and E. S. Maccia, *Educational Theorizing Through Models*, No. 3, September, 1966, pp. 189-197.
- Macdonald, John, *A Psychologists Response*, No. 3, September, 1966, pp. 235-238.
- MacIver, D. A. and E. A. Holdaway, *An Analysis of the Use of Models in Education*, No. 3, September, 1966, pp. 163-188.
- Miller, Peter J., *Hannah Moore and Eighteenth Century Womens Education*, No. 1, March, 1966, pp. 7-25.

- Neville, M. H., *Methods of Teaching Reading To Beginners*, No. 2, June, 1966, pp. 131-139.
- Oetting, E. R., *Dogmatism in College Students*, No. 1, March, 1966, pp. 37-39.
- Richek, H. G., *Differentiating Prospective Elementary and Secondary School Teachers*, No. 2, June, 1966, pp. 127-130.
- Richek, Herbert G., Frances F. Fuller and Donald J. Veldman, *Tape Recordings, Feedback and Prospective Teachers' Self Evaluation*, No. 4, December, 1966, pp. 301-307.
- Scriven, M., *Student Values as Educational Objectives*, No. 2, June, 1966, pp. 89-103.
- Snider, James G., *All-Inclusive Conceptualization and Intensity Meaningfulness: A Research Note*. No. 4, December, 1966, pp. 281-284.
- Storey, Arthur G., and George Desson, *Achievement as a Function of Assigned Grades*, No. 4, December, 1966, pp. 269-274.
- Vandenberg, D., *Student Values?* No. 4, December, 1966, pp. 275-280.
- Veldman, Donald J. and Herbert G. Richek, Frances F. Fuller, *Tape Recordings, Feedback and Prospective Teachers' Self Evaluation*, No. 4, December, 1966, pp. 301-307.
- Whitely, Thomas, *The Challenge—The Slow Learner*, No. 4, December, 1966, pp. 297-299.



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